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FLIGHT

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Brochures and Behaviour

SOMETHING was different about this year's annual general meeting of IATA, the International Air Transport Association, which ended last Friday in Copenhagen. It was not the hospitality of the host airline, SAS—which was at least as warm as that of Japan Air Lines in Tokyo last year, of Air-India in New Delhi the year before, of Iberia in Madrid in1957 or of BEA in Edinburgh in 1956. There was the usual agreement, too, among the many airline chiefs and senior executives present that these meetings are useful—not least because there is plenty of shop to talk with colleagues whom, even in a world that these very men have made smaller, there is so little time to see during the year.

What, then, was missing? There were, so far as we could see, no representatives of any of the world's aircraft manufacturers. They and their brochures have always been at these meetings in the past, though unhappily, some over-zealous junior salesmen have sometimes made rather a nuisance of themselves.

But it would be a pity if manufacturers, who are an integral part of the air transport industry, were to remain *personæ non gratae* at these a.g.m.s. We met a number of senior airline people at Copenhagen (Robert Cummings of NYA, for example) whose point of view this is. Of course, the manufacturers are probably shedding no tears over the money they saved by not attending this year. But they ought to be represented at Sydney next year, provided their salesmen take with them not only their brochures but also their best professional discretion.

Looking Towards Hatfield

IF there is one attribute above others for which the de Havilland Aircraft Company, of Hatfield, Hertfordshire, is admired the world over it is that of individuality. Everything that de Havilland tackle, whether it be an aircraft or a new design office, has something a little—and often a lot—that is special about it. Good taste and big business are reconciled in this company in an uncommon degree, and the fibres that knit the firm together have now been strengthened and tautened by the trials and the triumphs of 40 years. (More in fact, for the line of D.H. aircraft really began in 1910.)

To the pilots of the late war the Tiger Moth was what the D.H.6 had been to their fathers. To them was the Mosquito as was the D.H.4 of the Kaiser's war—beyond compare. Yet it was the peaceful years that were to bring the company its greenest laurels. The Moth set Britain humming with the delights of private flying. The Fox Moth, Dragon, Rapide, and D.H.86 showed how cheap air transport could be made. The historic Comet Racer of 1934 (the prime example of which, restored by the de Havilland Technical School, is still proudly shown to guests at Leavesden) made long-range history. And the Comet of later years has led the airlines into a new regime of speed.

Now once again D.H.s take the lead with the triple-jet Trident—a transport aeroplane that, with its triplicated systems, will enable the airlines to operate their schedules safely and punctually in any weather—and as a bonus will offer important new economies.

This year, as we have noted, brings not one but two de Havilland anniversaries, for it was in 1910 that Sir Geoffrey de Havilland flew his first aeroplane. To "D.H." and to D.H.s, then, go the good wishes, the goodwill and not least the gratitude of the nation.

FROM ALL QUARTERS

FOUR OF THE FEW: Battle of Britain pilots who turned up at Biggin Hill for the celebrations mentioned on this page were, left to right, Gp Capt R. W. Oxspring, Wg Cdr R. Stanford Tuck, Wg Cdr R. E. Havercroft, Wg Cdr Don Kingaby. They are standing by an Me109

TSR.2 Order

AS we close for press we learn that a development contract for the Vickers/English Electric TSR.2 is shortly to be placed by the MoA with the British Aircraft Corporation. This decision to go ahead with a major project the future of which has in some quarters been questioned indicates that design has been going according to plan and that firm orders will now be placed with manufacturers contributing ancillary equipment. No indication is likely to be given of the actual number of aircraft being initially ordered.

NATO and the P.1127

FROM Bonn comes news that Dr Theodor Benecke, chairman of NATO's VTOL committee, on which Great Britain, France, Italy and Germany are represented, has recommended that the Hawker P.1127 should be tested by NATO. Dr Benecke also mentioned the advantages of such aircraft for ship-borne operation—notably that a reduction in the size of front-line aircraft carrier might be possible.

Napier Managing Director

ENGLISH ELECTRIC have announced that Mr H. Sammons, CBE, is retiring at the end of this year from the position of managing director of their subsidiary D. Napier & Son Ltd. Mr Sammons, who has been with the company since 1942, will be 65 in February next year. He is being succeeded (from January 1, 1961) by Mr H. E. C. de Chassiron, CBE, who has been elected to the Napier board and appointed managing director-designate. Mr de Chassiron joined English Electric in 1958, after having been Deputy Director of Manpower Planning at the War Office from 1955 to 1957, and is at present assistant to the general manager at English Electric's Rugby works.

Mr H. E. C. de Chassiron

Rolls-Royce Changes

NEW appointments announced by Rolls-Royce Ltd are those of Mr H. Pearson as a director of the Aero-Engine Division and chief engineer (performance and research); Mr R. Nicholson as a director of the Division and divisional general manager of production; and Mr R. M. Kendall, former general manager of Rolls-Royce of Canada, as general manager, sales and service, in the same division. Mr J. Wood is to become general manager and vice-president of Rolls-Royce of Canada, with Mr D. Boyd as his deputy.

Biggin Hill Remembers

ON the Kentish plateau that the world now knows as Biggin Hill the 20th anniversary of the Battle of Britain was celebrated last Saturday in comprehensively historic style: there were Spitfires and Hurricanes (two of each), swept-wing fighters, piston- and jet-engined trainers, V-bombers, maritime and transport aircraft, medium bombers and helicopters; in fact most types the RAF has operated since the Second World War were either flying or on static show. For good measure, in a display that lasted for four hours, there were USAF aerobatics by the Skyblazers; RAF parachute descents by the Skydivers; attacks by the RAF Regiment; and a balloon that floated beautifully over towards Surrey, looking like something out of the 18th century. In one of the hangars, like dark shadows of the past, were German aircraft against which the Battle of Britain had been fought: a Ju88, He111 and Me109 and 110—a brooding collection.

Biggin Hill was only one of twenty-five RAF stations open to the public last Saturday, and it is hard to know whether to praise more the skill of participating pilots or the controlling and prior planning which make possible these annual co-ordinated displays. Mention of Treble-One Sqn would not be invidious, for this was their UK swan-song as the present Fighter Command aerobatic team. A final performance as fine as any; but all who took part in the show deserve congratulations.

The SABC's New President

AS many readers will have noticed, there was a misidentification in the caption to the photograph on page 452 of our last week's issue. The figure on the right was, of course, Sir George Dowty, the new president of the SBAC. Apologies both to Sir George and to Mr H. W. Goodinge, one of the Society's two assistant directors, who was named erroneously.

Vulcan's Escape

SKILFUL airmanship by the pilot of a Vulcan from the Handling Squadron, Boscombe Down averted what might have been a serious accident at the Bristol airfield at Filton on September 16. Going round again after an attempted landing in rain and bad visibility, he had jettisoned his braking parachute and passed the end of the runway when his undercarriage touched the perimeter fence adjacent to the main Bristol - Gloucester road. Flying debris and jet blast as the Vulcan was lifted clear caused some damage to petrol pumps at a filling station and to cars on the road, and a motorist was treated in hospital for shock.

The Vulcan was flown on to RAF station St Mawgan, Cornwall, where it orbited to burn off fuel and to allow the crew of a Boeing 707 (BOAC train crews there) to inspect its undercarriage from the air. No serious damage was apparent, and a successful landing followed.

PFA Rally Attracts 55 Aircraft

AT Cranfield, over the week-end of September 9-11, the Popular Flying Association held its fourth and most successful rally. A total of 55 aircraft came in to pay their respects, and 39 of them stayed for the whole week-end.

Among pilots and passengers were nine particularly welcome visitors from France, mostly in Jodels of various types and including M. Beraud, president of the Réseau du Sport de l'Air, of which the PFA is the British counterpart. His brother was also one of the French contingent, with MM Favriel, Barritault and other enthusiasts well known to those who take their ultra-light flying seriously. The aircraft from France ranged from M. Beraud's Jodel D.112, *Sylvain Badez*, to the very handsome three-seater SAN DR.100 of M. Favriel (who won the *concours d'elegance*).

One of the trends to be noticed concerning the foreign aircraft was the fact that some of the older types previously powered by 65 h.p. Continentals have been re-engined with the "quatre-vingt dix." Tied as they are by regulations which specify engines under 75 h.p. in ultra-light airframes (remarks a correspondent), the PFA might well take note of this fact. Many of their members feel that an increase in power of up to at least 90 h.p. is desirable.

The rally was a rousing success from start to finish. The College of Aeronautics, good hosts to so many people on so many different occasions, provided first-class accommodation and excellent food, and nearly all the Frenchmen won a bottle of whisky for something or other, so *they* were happy. There were, too, a number of quite interesting aeroplanes among the British contingent, including Chris Roberts' cabin Tiger Moth, now sporting sleek-looking spats and an enormous Grimes anti-collision light; and the Taylor monoplane, which was demonstrated in a fighter-

like manner by "Tich" Holmes. But the device which gave most pleasure to the French was the scooter, demountable for transport in small aircraft, on which a Mr Pelham Reid arrived at the aerodrome. Before the week-end was over they had nearly all given their imitations of French speed-cops on it, in and around the hangars.

The week-end finished on a pleasant "come-one, come-all" note, with Jim Hoseason (who is, in fact, from an ABAC, not a PFA, group) announcing that his group are having a fly-in at their new—yes, new—aerodrome at Seething, on October 16 and would everybody come and see him. A letter to him at 89, Bridge Road, Oulton Broad, Lowestoft, will bring further details.

Next Year's Comanches

NEXT month Piper start deliveries to its dealers of the first 1961 Comanches. The basic choice of 180 h.p. Lycoming O-360A or 250 h.p. Lycoming O-540-A1A5 remains unchanged, but pilot convenience and passenger comfort have received attention. As exteriors remain unaltered, there are new paint schemes to distinguish the 1961 airframes. Comanche 180s are now finished all-white with blue, red, green or tan cheat lines and 250s have white wings, cabin tops and tails, and fuselages of Bahama blue, Pontiac red, Portland green or Phoenix tan.

An extra 30 US gal of fuel in the new 250s, bringing the total tankage to 90 US gal, increases range at 75 per cent power to 1,100 st.m., or 1,650 st.m. and 11.2hr endurance at optimum cruising conditions. By permitting an increase in all-up weight of 100lb, disposable load has been increased by a similar amount, possibly as a result of pressures by US private owners to have a greater weight and space allowance for more and more radio. A new instrument panel reflects this trend. Most radio equipment is now centrally located, dividing engine information (manifold pressure, r.p.m., temperatures and pressures) from the flight instruments in front of the pilot. Four models—Standard, Custom, Super Custom and AutoFlite—are offered with either engine size and the Super Custom model, for example, is equipped with a Narco 90/190-channel transmitter/receiver, VOA-3A Omni converter and CS-3 VOR/ILS navigation indicator. The addition of a second Narco Mk V for communications on the lower left side of the pilot's panel completes a typical "2½" system.

Piper's AutoControl two-axis autopilot, with which 70 per cent of all Comanches have been equipped, is again standard in AutoFlite models, but for an extra $1,245 (in the US) AutoFlite Comanches can now be supplied with a three-directional transistorized unit known as the AltiMatic. It has a course selector, pitch control and heading lock, and altitude and course can be preselected. Another new instrument, with which all except standard models are now equipped, is the AutoNav ADF. The heading function is fulfilled by a left/right needle only.

Other additions include toe brakes on an independent hydraulic system, and a new heating and ventilating system with a panel-mounted control console. The cabin has been further soundproofed and fuel sumps can now be drained—and visually checked—from the pilot's seat. Piper claim that more Comanches have been sold over the past two years than any other aircraft with a retractable undercarriage.

B-47 Collision

AN extensive ASR operation was mounted by the RAF and USAF over the eastern Atlantic last week, with RN and USN ships and submarines, to search for survivors of a B-47 of Strategic Air Command which went down into the sea after a mid-air collision on September 14. The search was abandoned four days later.

The missing aircraft was one of three B-47s flying from Plattsburg AFB, NY, to Brize Norton. The other machine involved in the collision landed safely at Shannon Airport with its port outer engine almost torn off, damage to the inner port engines, and a partially destroyed port tailplane. The third B-47 completed its flight to Brize Norton.

PROBING A PIRATE: Herr Strauss, West German Defence Minister, visited Dunsfold recently to see and discuss the Blackburn Buccaneer. Chief test pilot Derek Whitehead is here explaining the folding nose while Capt E. D. G. Lewin looks on

IN BRIEF

AWA Argosy 660s ordered in quantity for Transport Command have been officially named Argosy C.1s.

The first Vulcan B.2 squadron in Bomber Command, No 83, is being formed at RAF Waddington later this year. The present No 83 Sqn, equipped with B.1s, has been re-formed as No 44 Sqn.

The Air Ministry have ordered a £600,000 data-processing system from Associated Electrical Industries. It is to deal with the distribution and issue of supplies and equipment throughout the world.

The RCAF won the Guynemer Trophy for the third year in succession when the 1960 competition was held at Cazaux in France last week, with the RAF team runners-up. The trophy, which is for air firing, is competed for annually by Aircent squadrons.

When HMS *Ark Royal* was participating in a NATO exercise on September 18 in the vicinity of the Shetlands a Sea Vixen was involved in a night deck-landing accident, caught fire, and went overboard. Other vessels, and helicopters, failed to find the crew of two.

At a meeting of the Court of the Coachmakers' and Coach Harness Makers' Company on September 1 the following officers were elected for the ensuing year: *Master*, Sir Reginald Verdon Smith; *Senior Warden*, Col G. A. Norris; *Renter Warden*, Mr P. S. Croall; *Junior Warden*, Lt-Col A. T. Harris.

Mr E. C. Williams, Scientific Adviser, Intelligence, at the Ministry of Defence, is to be director of the Air Defence Technical Centre at The Hague from October 1. This is the first appointment announced by the NATO Council since the centre was transferred from SHAPE to NATO as a financial responsibility.

After six months of negotiations, according to a Toronto report, the USAF is to receive 40 Canadair CL-44s, bought at a cost of $150m. In return, the RCAF will get 70 McDonnell Voodoos, for which Canada will pay by manning an increased number of the radar stations along the US-Canadian border. Value of the Voodoos is put at $100m.

Mr P. J. Daglish, BSC, MIMechE, MIEE, AFRAeS, has been appointed special executive responsible to the managing director of D. Napier and Son Ltd, with effect from September 14. He joined English Electric in 1946, after service in the Royal Navy, and prior to going to D. Napier and Son was manager of the English Electric aircraft equipment division at Bradford.

We regret to record the death of Air Marshal Sir Victor Richardson, who was Director-General of Medical Services, Air Ministry, from 1938 to 1941. Sir Victor, who served in the Royal Navy and RNAS in the First World War, was 76 years of age. From 1942 to 1945, after his retirement from the RAF, he was Chief Casualty Services Officer in the London Civil Defence Region.

RE-PAINTED INDIANS: Taking off from the Piper airfield of Lockhaven, Penna, are the new 1961 Comanches. In the foreground is the 180, behind it the Lycoming O-540-powered 250. See "Next Year's Comanches," above

Bratislava Diary

IMPRESSIONS OF THE WORLD AEROBATIC CHAMPIONSHIPS

BY NORMAN JONES

PARTY left Redhill at 0900 hours on Thursday, August 25, in dull weather and good spirits—Peter Phillips and John Ayers in Tigers, and Charles Bodington, Denis Cheesman and self in the Jodel D.140 Mousquetaire, plus a terrifying amount of luggage and spares, which the Musketeer carried with such ease that she became known as Porthos. Stopping at Lympne to fill up with as much petrol as possible to save our slender funds, we took off for Gosselies at 1055hr in showers and poor weather but good visibility. Arrived Gosselies at noon. A dullish place—juke-box cafés and a number of sad looking Americans—enlivened, however, by a visit to Nipper Castle, where they are making a splendid job of turning out Tipsy Nippers for the multitude. Mr Tips and an old friend, Bernard Neefe, did the honours in the short time available. Fascinating to see a factory take shape which one day may rival Morris or Renault.

Left Gosselies for Frankfurt at 1500—a good crossing of the Ardennes, but the fun began when we got to Rhein Main Airport. Airliners of all shapes and sizes were taking off and landing, and Control was too busy to look out of the window. We could not get contact on the radio for over twenty minutes, but, *mirabile dictu*, no incidents, and finally landed as respectable as a maiden aunt, on instruction from the tower. As fuel was getting short, the two Tigers had to be unconventional and force-land on a grass patch. However, the officials at Frankfurt seemed to take a pride in handling unusual types of fliers and made little or no bones about sending us off next morning between a Boeing 707 and a Caravelle, although I think I did detect a slight note of relief in the radio operators' final instruction to close down. (N.B.—For other private fliers who want to see Frankfurt, go to Egelsbach, not Rhein Main.)

Scnwabasch was the next step for refuelling the Tigers, as the haul to Munich seemed a little too long. This is an interesting grass airfield—American Army to the south, and a charming Bavarian glider club to the north. Also, the last word in indoor barbecues—just the thing for many flying clubs.

Munich is the same as Frankfurt, but rather more civilized from the light aeroplane point of view. Met Frank Price with his Great Lakes Special on his way to Bratislava, too—180 h.p. Warner Scarab, vintage 1936. Frank had his machine flown in pieces to Munich and was erecting it himself in the hangar. Spends his time crop-dusting and doing aerobatic displays. A formidable competitor to some of the Czech and French aces. We are looking forward to seeing him perform.

On August 27 flew on to Linz, where we heard that competitors Charrolais and Ruesch had already gone through. Recommend Linz as a port of call for private fliers. Customs, bar, and restaurant all in one, and most convenient.

Left Linz with many good-byes from our Austrian friends after our three aerobats had each gone through their paces in good form for the last leg to Bratislava. The Danube here is lovely, and the Austrian countryside made a forced landing quite tempting. The Iron Curtain was invisible and seemed to be guarded only by buzzards flying at 3,000ft.

Bratislava has two airports—the Customs one with a very good runway, and a grass one where the competitions were to take place. Both seemed to be more or less occupied by the military, and all had lots of assorted Yaks, Zlins, Antonovs, etc.

Our two Tigers in formation on the Musketeer, we landed full of joy and jollity, to be met by a charming English-speaking Czech called Vera. Customs, currency control, etc., all very thorough, though cheery. We were told that there would be 33 competitors, so the judging was going to be quite a thing. Nine Czechs, seven Russians, two Swiss, three British, three French, one German, four Poles, three Hungarians, one USA.

The Tiger Club team with the author (who is the club's chairman). Left to right, Peter Phillips, Charles Boddington, Norman Jones, John Ayers, Denis Cheesman (ground engineer)

Bratislava is very hot. All the competitors are being put up in the same hotel, so briefing on the Sunday morning is pleasantly conducted over beer, tonic water and apples. Am very taken with these Czech interpreter girls—nice to look at and very intelligent. Am sure they must have come out top in their class. Considering they know nothing of flying or aerobatics they are making a wonderful job of explaining the very detailed judges' rules.

Each nation is occupying a separate table and discussion is lively. We are learning a lot. All the Czech pilots, including the delightful and good-looking Blaha—the local champ—are doing their very best to make sure that the advantages of local knowledge are minimized.

On Sunday afternoon there is a grand air display with all the concomitants with which we are getting familiar—the Pole who hangs in his glider vertically under a helicopter; massed gliders in formation; ninety parachutists with coloured canopies all jumping together (the programme says 180, but I count about 90); numerous separate aerobatic shows, including three Migs (the programme says seven). Unfortunately, in spite of attempts on the part of the Aero Club to keep the show amateur and purely sporting, the need to attract the crowd and the presence of bigwigs does lead to a certain amount of flag wagging and marching, which may destroy the "brothers and sisters in sport" idea that seems so promising.

However, on the Monday the competition proper starts. The British team—Ayers, Phillips and Boddington—certainly do not overrate their chances, but we are learning a great deal. One of our Tigers developed a slight defect yesterday, so Denis Cheesman is in his element.

Tragedy struck this afternoon after the British trio had put in some quite impressive practice, which I think surprised some of our Continental friends. That gay and lively French gentleman, Leon Biancotto, whom we had got to know and admire, fails to recover from an inverted spin in his Nord and is killed instantly. No doubt there will be an inquiry and the cause established. Our whole sympathy goes out to the French team and Madame Biancotto. Practice will be resumed tomorrow, and the first series of obligatory figures will be taken. These consist of flick rolls, inverted spins, stalled turns, etc., all carefully planned in a sequence, which the competitor has to go through exactly, while his evolutions are confined strictly to a "frame" marked out on the ground. Each competitor carries a barograph to ensure that he or she does not exceed the height limits—a maximum of 800 metres and a minimum of 100.

On Tuesday morning, in slightly subdued and thoughtful mood, the competitors assemble and draw lots for starting. Lots of delay is caused by the "commission" from Prague trying to sort out

Teams relaxing: the Russians (left) and the Czechs. The two girls, Jirina Lockerova and Eva Krencova, competed in the Lockheed Trophy contest at Coventry this year

the wreck of the Nord. Practice is resumed at 1110 by Ruesch Jnr of Switzerland. Frank Price is the next performer. In the air, his Great Lakes looks very like the Jungmeister. Rather scrappy practice for the rest of the morning, and in the afternoon, at long last, the competition due to commence.

No 1 to take off is the Russian, Studonov, in one of the latest Zlin 326s with retracting undercarriage. Blaha, who comes next, puts up his usual perfect performance. Altogether, thirty competitors go through the manœuvres, the Czechs being noticeably better than the Poles, Russians or Hungarians, all using the Zlin of various marks. Of the "foreigners," Verette of France is extremely smooth. The British trio are a little unlucky to come late in the evening when the light is poor and the airfield markers not too clear, but they perform adequately.

Eva Krencova gives us a bad moment when she stays in her inverted spin for 5½ turns instead of 2½, but extricates herself and carries on with her performance with great coolness.

B. N. Vasjenko is the only Russian to fly a machine from his own country—a Yak-18P, a very well built aeroplane, but without the class of the Zlin.

Weather fair on Wednesday the 31st, and competitors assembled at 0900 to draw lots for the second half of the obligatory manœuvres. These are similar to the first half, but in the opposite sense, and include a tail slide instead of the outside loop. The interesting question is whether Verette, who was a close runner-up to Blaha yesterday, will keep his good form. And if the Russians, egged on by their trainer, will do better.

The British team once again perform adequately, but cannot yet compete on completely equal terms with the local experts, although it is beginning to be noticed that in grace and fluency the Tiger compares very well with all other types, except perhaps the Stampe.

First and second, in Zlins: Ladislav Bezak and Jiri Blaha

An affecting ceremony of farewell to the coffin of Leon Biancotto, and the buying of a wreath, occupies the afternoon and incidentally gives us the first opportunity to see a little of Bratislava.

Thursday, September 1, and free manœuvres. We are all wondering how we shall fare in these. A lot of fuss made by the judges and officials, who are the same all the world over—this time to give the impression of complete fairness by saying that they are not aware of the identity of the competitors (obviously absurd, as even the Zlins are all a little different), but the draw for positions is done in camera.

An intense rivalry is clearly developing between the Czechs and Russians. The free style competition is started by Albert (father) Ruesch. Peter Phillips comes No 10, and puts up a most graceful performance, unfortunately a little too low, so we think. Frank Price does strange things in the Great Lakes, then it's John Ayers' turn. He stays a little too far downwind but shows a considerable improvement on Coventry standards. The Czechs, especially Blaha, Bezak, and Skacelik, are of course quite immaculate, with Vasjenko in the strange Yak coming best of the "foreigners."

Now the British team may relax a little; as the finalists consist of eight Czechs and one Russian, all of them have to repeat the two obligatory sequences of four minutes, followed by five minutes' free style. It must be admitted that these high-class aerobatics are like skating—the accurate performance of the figures is of intense interest if you understand them, but a little dull to the uninitiated. Indeed, the more expert the performer, the easier the performance seems.

It becomes increasingly obvious too that these competitions are quite unrealistic unless the same aeroplanes are used by all competitors, and there, as Hamlet says, is the rub. I am quite convinced that a good Tiger makes the best competition mount of all, as undoubtedly it is the most difficult aeroplane in which to give a good performance. The Stampe is another possibility, and, of course, the Zlin.

Friday is rather a windy day, but the nine finalists all perform

Spectator-density in this picture suggests Farnborough Sunday

their obligatory manœuvres with only the finest degree of fault, Blaha being a close first with a lead of three marks. The marking for the free manœuvres is subject to a lot of criticism, and one has every sympathy with the judges (four Czechs, two Russians and one Frenchman). Bezak, Hulka and Skacelik are all marked higher than the favourite Blaha. Presumably Blaha made some small mistake not noticed by me, or perhaps his 16-point roll was not appreciated by the judges. This brings the final result to Bezak first, Blaha second. A slightly disappointing result to the Czech populace, I imagine; Blaha, with his good looks and cheery personality, is a national hero to them.

* * *

The final days we spent in trying out one another's aeroplanes. The British trio were able to test the Zlin 226, and Blaha and Hulka both saw what they could make of our Tigers.

Undoubtedly two facts emerged from the very pleasant week that we spent in "assisting" at the World Aerobatic Championship, and in this respect we have to admit that, from the point of view of quality and the number of entries, the Czechs maintained their rather broad claim. These facts are (1) that properly organized and run, these high-class aerobatic competitions have a great future; and (2) that a lot of thought and planning must be put into them. The Czechs have gone quite a long way with their obligatory and free manœuvres.

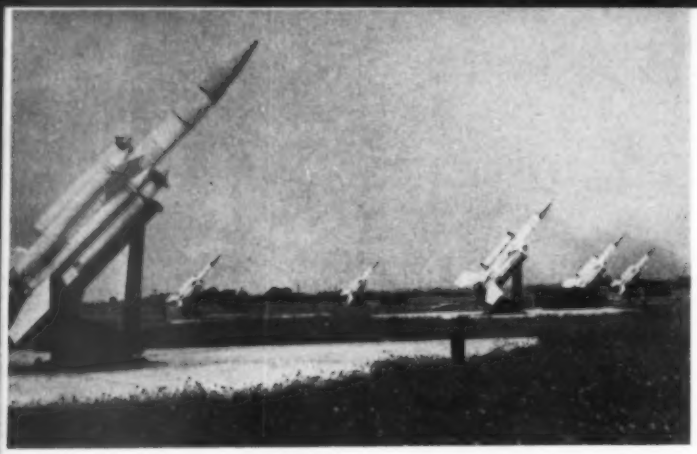
The question of aeroplanes is going to be a burning one. Obviously, at the moment there is nothing to touch the Zlin. In the Yak-19 the Russians have produced a more powerful aeroplane, but it seems to be too big and heavy. Verette and Charollais were unable to show that the Stampe could compete, but the machine seemed to have a good chance.

The Jungmeister (no longer in production) is too short, and cannot be thrown about with the grace of the Zlin. The Tiger has not enough power, but was the most graceful aeroplane there, and, as the Czechs discovered, was far more difficult to aerobat than their Zlins. Probably we shall have to follow the example of the Sailing Olympics and choose one, two or three types and make all competitors use them in the same classes. Alternatively, have a limit of horsepower. It is obvious that, if these international aerobatic competitions catch on, the amount of horses which a competitor may use must be limited. This is, in fact, what happened at Bratislava. At the finish were eight Czechs, all using Zlins, and a Russian using a Yak. The finer points of the way the Czechs handled their machines was most fascinating. The Russian, who many thought was only in the final for political reasons, could not really be compared with them.

On the score of the general organization of the championship, one can give nothing but praise. The sad accident to Biancotto delayed everything for 24 hours, but the briefing and planning were put through with the minimum of fuss and to the maximum enjoyment of competitors and onlookers alike.

CHAMPIONSHIP RESULTS: POINTS SCORED

Pos.	Pilot and nationality	Obligatory manœuvres	Free-choice manœuvres	Total points
1	Ladislav Bezak (CZ)	350.67	350.00	700.67
2	Jiri Blaha (CZ)	353.66	340.00	693.66
3	Frantisek Skacelik (CZ) ...	346.60	340.80	687.40
4	Jaromir Hulka (CZ)	332.49	343.60	676.09
5	Boris N. Vasjenko (USSR) ...	336.15	311.20	647.35
6	Zdenek Beseda (CZ)	308.48	333.00	641.48
7	Jiri Stoklasa (CZ)	306.58	331.80	638.38
8	Ladislav Trebaticky (CZ) ...	348.28	282.40	630.68
9	Juraj Souc (CZ)	320.32	304.00	624.32
British team placings:—				
27	Peter Phillips	253.30	193.60	446.90
28	John Ayers...	223.74	198.00	421.74
29	Charles Boddington	188.89	166.40	355.29



This recent scene at RAF North Coates, Lincolnshire, is one of the first to show a complete Bloodhound Fire Unit in service. This station has been operational for two years

Missiles and Spaceflight

MET OFFICE GETS IN SPACE ACT

The creation of a new assistant directorate within the Meteorological Office, concerned with high-atmosphere problems and in particular the use of sounding rockets, high-altitude balloons and artificial satellites, is recorded in the *Annual Report on the Meteorological Office* for the year ended March 31, 1960. One of eight assistant directorates under the Director of Research, Dr R. C. Sutcliffe, the new group is headed by Dr R. Frith, OBE, MA, PhD.

Also disclosed in the report is the fact that design work on a satellite experiment to measure the vertical distribution of ozone in the Earth's atmosphere, and the construction of instruments for mounting in a Scout satellite vehicle, have begun at Kew Observatory.

ECHO 1 KEEPS GOING

It is clear that Echo 1, the 100ft sphere of 0.0005in Mylar polyester film placed in orbit on August 12, has already far surpassed NASA's expectations. It may be recalled that during its first 12 days it was perpetually in sunlight, thereafter spending up to 30min on each orbit in the Earth's shadow. Although the time in darkness on each orbit has now increased to between 35 and 40min, the sphere has not collapsed but has merely suffered a few kinks (plus a number of micrometeorite punctures).

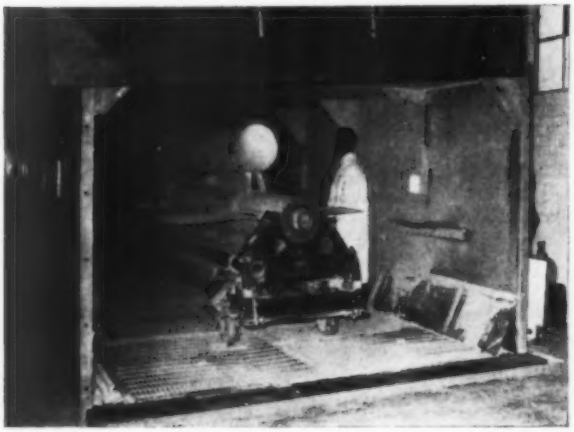
The original apogee/perigee were established at 1,050 and 946 miles respectively. According to NASA, the orbit has remained very steady, apogee having decreased during the first month by only 2.8 miles, to 1,047.7, and perigee having increased by 3.3 miles. (Curiously, a London newspaper states that the orbit has become progressively more eliptical, and that the present values are 1,165/835 miles; apogee and perigee are said to be respectively increasing and decreasing by about 2 miles per day.)

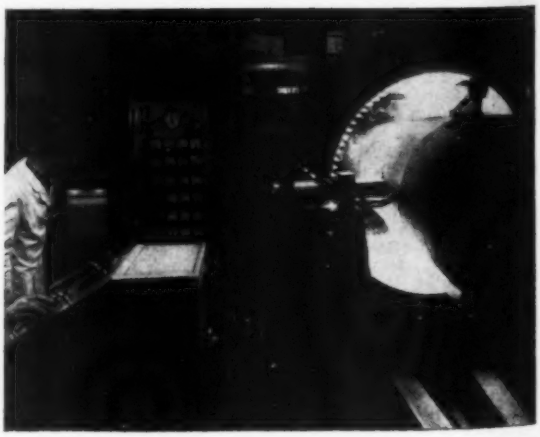
NASA originally expected Echo 1 to have a useful life no greater than about ten days. It is impossible to say how long the satellite will continue to serve its original function as a reflector of electromagnetic radiation, but NASA now estimate that it will stay in orbit for about a year. Some 400 voice and CW transmissions have been relayed from Echo 1, 24 of these being across the Atlantic. A recent advertisement by Varian Associates, of Palo Alto, California, describes the klystron amplifier system (type VA-800C) built into the aerial of an 85ft parabolic dish aerial for tranmissions relayed by Echo between the Pacific and Atlantic coasts of the US. The frequency chosen was 2,390Mc/s and the output 10kW.

ANTI-NEEDLES

Speaking before the General Assembly of the International Scientific Radio Union on September 15, Prof A. C. B. Lovell (Jodrell Bank director) emphasized that Project Needles, suggested by the US Air Force, would seriously hamper radio-astronomy—and, indeed, would disrupt the passage of electromagnetic radiation to and from the earth. Needles is intended to be a relatively cheap method of providing global radio communications, of particular interest to Strategic Air Command. It involves the placing in orbit of many thousands of small "fibres" of metal foil tuned to half the wavelength of the chosen radio transmission and acting as resonant dipoles. The foil would behave like radar chaff ("Window") and would introduce random and spurious signals or interruptions in existing earth/space communication.

The Bristol/Ferranti Bloodhound has necessarily been subjected to severe environmental testing. These photographs, newly received from Bristol Aircraft, illustrate (right) a driving-rain test, a complete missile body (below) suffering a simulated dust-storm and a rear body —minus ramjet—undergoing a kinetic-heating test (below right)





Missiles and Spaceflight . . .

RUSSIANS IN SPACE?

On September 14 several British national daily newspapers suggested that the Soviet Union had already launched a man into space on a free "up-down" trajectory; in fact the *Daily Express* asserted that "Soviet astronauts" (plural) had been recovered from heights of 60 miles, and purported to give details. As we go to press there is no confirmation of these stories, although—also on September 14—*Trud*, the Soviet trade-union newspaper, published an article by scientists identified as "Novikov and Nikolayev," in which it was strongly suggested that Russia's successful recovery of numerous living organisms, including dogs, from ballistic and orbital trajectories will "soon" be followed by manned spaceflight. It is relevant to note that on the same day three Soviet ships were seen making for the area in the central Pacific used by Russia for nosecone impact.

SANTA SUSANA TODAY

In our September 16 issue we published a description of the Ministry of Aviation's big rocket-engine test establishment at Spadeadam, managed by Rolls-Royce Ltd. A major US counterpart is Santa Susana, which we first visited last year (*Flight*, April 17, 1959). Last month one of our American correspondents visited this impressive facility again.

In the Santa Susana Mountains—he writes—an hour's drive from downtown Los Angeles, where bandits once roamed and cowboys have long performed before motion picture cameras, is the most comprehensive rocket testing centre in the US. This is where the Rocketdyne Division of North American Aviation Inc tests the powerplants it has developed for Redstone, Atlas, Titan and other missiles.

A single, winding, uphill road leads from the San Fernando Valley to the three-square-mile test enclosure in the mountains. There are 19 engine test stands, and since some of them can be used to test engines horizontally as well as vertically, a total of 26 positions is available.

Rocketdyne has placed two or more test stands at six principal locations on the three-acre testing site. Each location is in a canyon. In some instances, the stands are hung on man-made shelves cut into the canyon wall, with the far sides of the canyons often blackened by engine exhaust. The canyons act as natural barriers in confining noise and separating each site from its neighbours. Control centres are located 150yd from their respective stands, off to one side. There are also many smaller stands for running scale models of engines or for testing new fuels.

Although Rocketdyne's greatest engine, the huge F-1, capable of 1.5 million pounds of thrust, will not be tested in the mountains, but at special stands at Edwards Air Force Base several miles away, many of its components are being tested at the Santa Susana site. Currently, H-1 engines rated at 188,000lb thrust are being tested, but most of the big engines are being cleared for military use at a nominal rating of 165,000lb.

The H-1s are for the Saturn booster for space research. As noted in *Flight* of August 5, four engines are mounted on an outer ring of Saturn, and these will gimbal to provide guidance. Four more are mounted in a stationary array inside the outer ring to provide additional thrust. All eight H-1 engines for each booster are run several times in the Santa Susana canyons before they are shipped to the NASA Marshall Space Flight Center at Huntsville, Alabama, where they are then tested in unison to produce a total thrust of 1,500,000lb. The H-1s are currently being subjected to 60sec full firing tests. The propulsive jet is directed down into a right-angle elbow, of reinforced concrete, cooled during firing by water flowing at a peak rate of 8,000 US gal/min (6,660 Imp gal). From 30 to 40 per cent of the water is recovered for reuse; water storage tanks are located farther up the mountains and 17 wells have been drilled on the property, some to a depth of 3,500ft, to provide the 950,000gal needed each day.

Santa Susana also is a heavy consumer of oxygen. Some 390 short tons of liquid oxygen are turned out daily by a plant operated for the US Air Force by Air Products Inc. When daily demands exceed this capacity, additional lox is trucked in from Los Angeles. Most engines, including the H-1s, burn RP-1 fuel, which essentially is low-grade kerosine.

The site includes four component testing laboratories that provide a total of 74 test positions. Each turbopump, turbine, gas generator and other major component is subject to firing tests appropriate to it before installation in a complete engine. The fuel-rich exhaust gases from such tests are shot through stacks atop the roof of each testing laboratory. The surplus fuel burns brightly and can be seen for miles at night.

Rocketdyne recently stepped up the processing of results from Santa Susana by using radio to transmit the data to nearby Canoga Park. There it is processed through an IBM.7090, capable of ten times the speed of the familiar IBM.709 computer. The 7090 can make 40,000 multiplications, or carry out 230,000 to 430,000 "logic" operations, per second. Though it costs something over $3m, it translates the data after each test firing and feeds it back to the test site in comprehensive form in about three minutes. This operation used to take two to three weeks.

What may well have been the highest relative speed in any successful interception—M7, or about 4,600 m.p.h.—provided the hardest test yet of the Nike Hercules surface-to-air system. Two Hercules were fired from opposite ends of the White Sands range on September 14, to achieve a successful interception at a height of 19 miles.

It was announced on September 15 that detachments for "trials on new surface-to-surface missiles" will be provided by the 29th Field Regiment, Royal Artillery. At present stationed at Plymouth, this regiment will conduct the trials "in order to give the Royal Artillery experience on which to base the organization and handling of these new weapons." The War Office declined to identify the missile involved, but daily newspapers have suggested that it will be Blue Water (described last week). There is no other new surface-to-surface missile in which the Royal Artillery is known to have an interest.

September 14 figures prominently on this page; and the greatest Western "space" achievement on that date was the successful launch from Vandenberg AFB of Discoverer 15. Boosted by a Thor-Agena, the instrumented payload weighing 300lb was placed in a 130/470-mile Polar orbit. The capsule within was ejected on the 17th orbit over the Arctic. This appears to have been achieved at the correct time, and the capsule fell into the Pacific north of Hawaii in the area expected. The C-119 transports failed to secure the capsule with their trapeze-like nets, and at the time of going to press it appeared doubtful that it would be recovered, even though it was spotted on the following day near Christmas Island, nearly 1,000 miles away.

Disaster struck the first Polaris fired from the second FBM submarine, USS *Patrick Henry* off Cape Canaveral on September 13. Fired from a depth of 50ft, the missile appeared to suffer first-stage jetevator failure, and performed violent manœuvres before skimming over the surface for more than a mile, hitting the sea, breaking up and finally impacting two miles farther on. Of the four previous submarine-launched Polaris (all fired from *George Washington*) the first three flew correctly and the fourth went out of control and crashed after 47sec.

In his opening discussion with the Australian Federal Cabinet in Canberra on September 14, Mr Peter Thorneycroft, Minister of Aviation, is reported to have read an official statement setting forth the views of the British Government on the Commonwealth's entry to space, and in particular containing technical and financial assessments of what can be done with existing hardware and facilities. The talks were officially described as preliminary and limited to a statement by Mr Thorneycroft and "some exchange of views." Later in the week the Minister was to visit Woomera and return to Canberra for further discussions. Unofficial sources have suggested that these talks will include an analysis of the practicability of bringing other nations into the programme—France and Germany in particular.

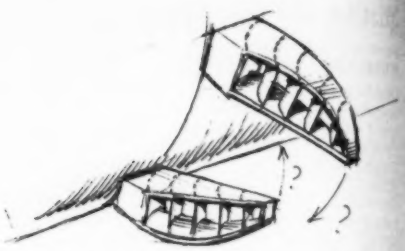
FORTHCOMING EVENTS

Sept. 25. Milan Aero Club: Helicopter Rally.
Sept. 26–Oct. 1. AGARD Structures and Materials Panel Meeting, Athens.
Sept. 28. Kronfeld Club: Meteorological Discussion.
Sept. 28. RAeS (Isle of Wight Branch): "Anti-Gravity and Flying Saucers," by L. Cramp.
Oct. 3-7. AGARD meetings (including 10th General Assembly), Istanbul.
Oct. 6-7. BritIRE (South Western Section): Convention on "Aviation Electronics and its Industrial Applications."
Oct. 7-8. British Institution of Radio Engineers: Aircraft Electronics Convention, Bristol.
Oct. 8-9 FAI Rally, Barcelona.
Oct. 11. RAeS (Luton Branch): Film Evening.
Oct. 12. RAeS (London Airport Branch): "The VC10," by Hugh Hemsley.
Oct. 11-12. Aerodrome Owners' Association: Annual Conference, Folkestone.
Oct. 12. Kronfeld Club: "Flying with the Fuchs Antarctic Expedition," by Sqn Ldr J. Lewis.
Oct. 17-18. Institute of the Aeronautical Sciences and Canadian Aeronautical Institute: Joint meeting, Montreal.
Oct. 18-19. Guild of Air Pilots and Air Navigators: Third Air Traffic Control Convention.
Oct. 19. Kronfeld Club: Annual General Meeting.
Oct. 26. BritIRE (South Western Section): "Radio Aids for Automatic Landing developed by the Blind Landing Experimental Units," by J. S. Shayler.
Oct. 26. Kronfeld Club: "Cruising on the Cheshire and Llangollen Canals," by John Furlong.
Oct. 28. Surrey and Kent Flying Club: Annual Dinner Dance.
Nov. 1-3. Institute of Welding: Autumn Meeting.
Nov. 3-9. Kronfeld Club: Painting Exhibition.
Nov. 4. Norfolk and Norwich Aero Club: Dinner and Dance.
Nov. 9. RAeS (Brough Branch): Seventh Sir George Cayley Memorial Lecture, "Forty Years of Aviation Writing," by Mai Oliver Stewart.
Nov. 17. Guild of Air Pilots and Air Navigators: Annual General Meeting.

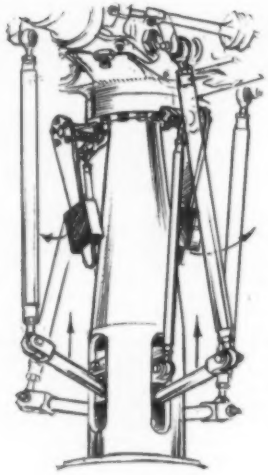
Sketched at Farnborough

POINTS OF INTEREST NOTED BY "FLIGHT" ARTISTS

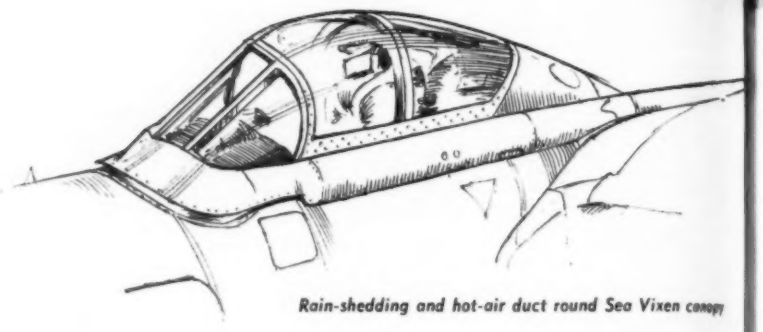
ARTHUR BOWBEER AND FRANK MUNGER



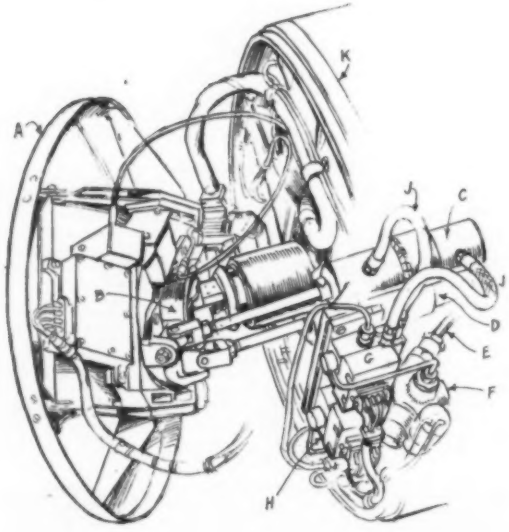
Air-brakes on model of Bristol 188 (seen from rear)



Saunders-Roe Sprite: Centrifugal linkage to relieve control system of blade-pitching forces

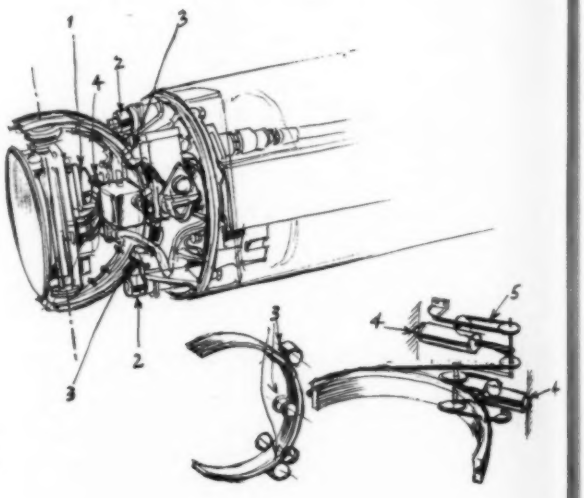


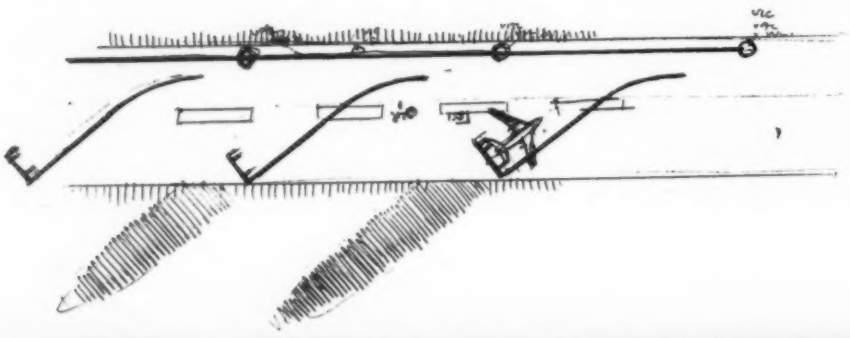
Rain-shedding and hot-air duct round Sea Vixen canopy



Bloodhound scanner: (A) Dish. (B) Gimbal head. (C) Azimuth servo. (D) Elevation servo. (E) Hydraulic supply. (F) Electro-hydraulic valve. (G) Azimuth control valve. (H) Elevation control valve. (J) Delivery to servo. (K) Guidance bay front frame

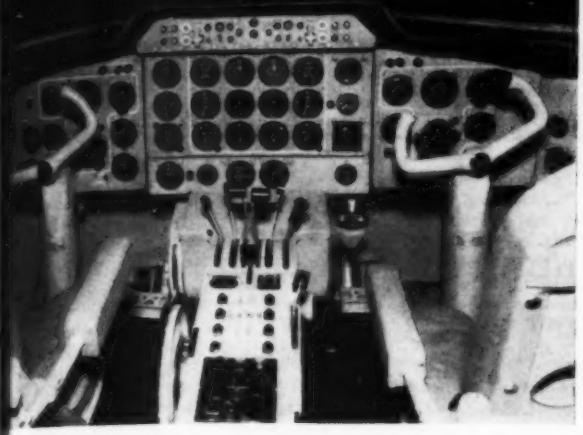
Thunderbird scanner: (1) Bootstrap gyro. (2) Rate gyro. (3) Roller assemblies. (4) Servos. (5) Stranded cables. Detail view shows multiple-roller mounting of main horseshoe frame





Runway guide-lines for V-bomber scrambles (three shown). Long line near side of runway guided vehicles. Note scorched-grass areas

FLIGHT SYSTEM SURVEY

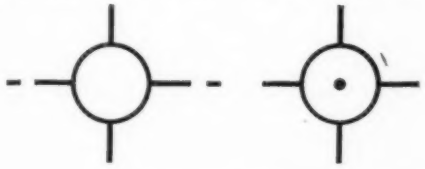


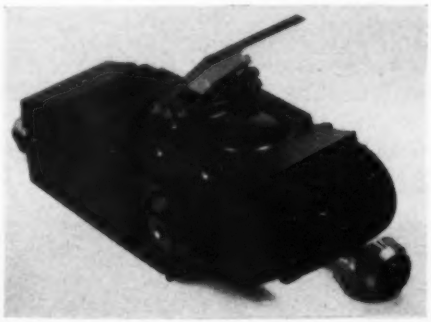
The workmanlike simplicity of this Avro 748 flight deck is deceptive. It contains controls and indicators for Smiths SEP.2 autopilot, Sperry CL.2 gyro-magnetic compasses, Zero Reader, ILS, VOR and ADF as well as Smiths-Waymouth fuel gauges and other systems controls

Ferranti ISIS Attack Sight

FOR some years Ferranti have been developing gun sights for light fighters in addition to the more elaborate fire-control systems such as Airpass. The latest version of the small equipment, exhibited at Farnborough, is the Integrated Strike and Intercepter System (ISIS) which is offered for light fighters such as the Fiat G.91 or Folland Gnat in four different versions. All of these may be used for aiming guns air-to-air, aiming guns and rockets air-to-surface or aiming conventional bombs in a dive attack. Some ISIS versions can provide collimated "head-up" steering signals from an external navigation computer and aim tactical nuclear weapons in the over-the-shoulder manœuvre. Provision can be made for aiming pursuit-type guided weapons such as Firestreak and Sidewinder. There are seven main units from which four-unit groups to form each of four types of system may be built up. Individual units are interchangeable so that a simple system may be upgraded.

The light fighter sight Type 10 is a small gyro sight without fixed graticule, the aiming mark being a moving "Celtic cross," as illustrated below. Two event markers may be superimposed. In the light director sight Type 10 the Celtic cross is used for conventional aiming, but a smaller Celtic cross is fixed and viewed in conjunction with a moving dot during either navigation or toss-bombing modes. The related control panel allows selection of up to 12 types of weapon, choice of speed and dive angle and either weapon or navigation modes. The bomb-release unit Type 10 controls the release of bombs in depressed line of sight dive attacks and uses a two-axis gyro for determining release range. The Type 11 incorporates electro-magnetic pick-offs on the two-axis rate gyro to allow rate of pitch during the pull-up to be measured and integrated. The Type 10 computer contains circuitry for controlling the sight and release gyros while the Type 11 also caters for Doppler speed and drift-angle inputs and for roll-stabilizing the pilot's display.





Above this photograph of the Ferranti light director sight, described above, are the "Celtic cross" aiming presentations of the light fighter sight (left) and the light director sight. In the first the whole symbol moves to direct aim and on the right the Celtic cross is fixed and the dot gives steering or aiming instructions

For air-to-air firing the sight has only two range settings, 600 and 1,000 metres, and a wing-span setting scale. The event markers would be used to indicate when a guided weapon had locked-on to its target. When bombing, the pilot tracks the target and presses the firing button to uncage the release gyro. The bomb is released when the range is correct; and the event markers appear to indicate gyro uncaging and bomb release. When Doppler is available, the pilot may attack at any speed between 300 and 500kt, instead of at either 350 or 450kt. Drift angle is accounted for and the display is roll stabilized.

The navigation mode provided in the third ISIS combination shows the dot moving laterally against the fixed aiming mark to indicate heading error. The pilot can therefore follow a selected course without looking down into the cockpit. For toss-bombing with the fourth ISIS combination, the pilot flies over the target and presses the firing button as he does so to uncage the release gyro. The bomb release unit automatically compensates for changes in speed and releases the bomb after about 110° of climb. The dot moves within the Celtic cross to direct the pull-up and event markers show uncaging of the gyro and release of the bomb. Release occurs only if the firing button is continuously held down, so that the attack may be abandoned at any moment.

The light fighter sight is 10¾in long, 4in wide and 6.3in high and weighs 7¾lb. The director sight is slightly wider. The basic ISIS requires only 28V supplies, but a.c., navigation and true airspeed inputs are variously needed for the more advanced combinations.

Rapid-processing Colour Film

THE rapid-processing film projector equipment produced by Kelvin Hughes for use in projecting radar displays onto large screens can now produce displays in three colours. The method used is to display selected synthetic radar information in a blue/green c.r.t. and to photograph it through one of three selected colour filters, using blue/green-sensitive film. Each radar display can be converted to one of the three colours, successive displays being projected together to form the three-colour picture. Hostile, friendly and unknown traces, identified by the normal synthetic display methods, could then be presented on a large screen to form an immediately identifiable situation display. Red, green and white symbols appear on a pale blue background.

The Kelvin Hughes RP1 processors can handle 35mm and 70mm film or 16mm and 35mm film. Speeds of 10ft/min and processing times of 30sec, or 40ft/min and 60sec are available, with either negative or positive processing. The RP3 is a new, smaller step-by-step processor which photographs discrete displays on a c.r.t., processes the positive or negative image in as little as 5sec and transports it to a theatre-type projection station. The special colour film requires 20sec for processing. The RP3 system can be used for military, civil and marine radar centres or as an off-line computer processor-monitor in industry, or in banks and stock exchanges. The film is a permanent record, but can also be rescanned for low band-width transmission over land-lines.

Position and Homing Indicator

IN these columns on August 5, recording the formation of the German Bendix/Telefunken company Teldix, it was stated that the PHI navigation computer for the F-104G and G.91, which was to be overhauled by Teldix, was produced by Bendix in the US. The PHI is in fact not only designed by Computing Devices of Canada, but also manufactured by them for these two aircraft.

Canadian Simulator for F-104 Series

GERMAN and Netherlands orders are to be placed with Canadian Aviation Electronics Ltd of Montreal for flight simulators for the F-104Gs to be built in those countries. C.A.E. won the Canadian order for the CF-104 simulator and at the same time made cost and technical proposals for the F-104G. The European orders will be worth about $18m and the programme will be supervised by the RCAF and Department of Defence Production. Other countries purchasing F-104Gs may also order these simulators.

Straight and Level

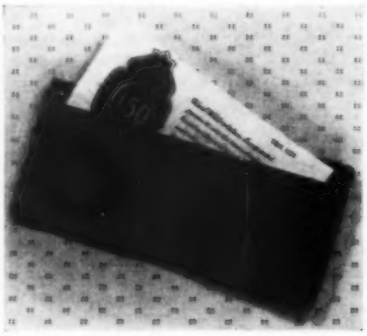
ONE of the things that the head of the US Federal Aviation Agency, Mr E. R. Quesada, has been discussing with the Ministry of Aviation in London is, according to the official statement, "regulations and their enforcement."

Mr Quesada's philosophy is that the interests of safety are best served if an airline operator or one of his employees knows that, if he is caught breaking the regulations, he will not only be fined but people will be able to read about his fine in the papers. For example, I read that he has just fined Southern Airways $250 for operating one of its aircraft for 35hr beyond inspection time; Capt Robert Holman of American Airlines $100 for flying his Convair 240 within 150ft of a Stinson light aircraft; Mr Robert Sturgess, an American Airlines mechanic, $25 for assembling a DC-7C propeller which subsequently had to be removed because 12 barrel half-bolts were loose; Mr. L. Jackson, a National Airlines flight engineer, $50 for failing to make a cockpit check before starting engines.

Good gracious, you might say, we don't want this kind of witch-hunting in this country. Well, you may be right. But there is no doubt that, as a general rule, the abuses of openness are fewer than those of secrecy.

● Like one or two other people, the technical editor went to Farnborough earlier this month. Proud possessor of a stop-watch, he amused himself by timing the take-offs of fixed-wing aeroplanes (I suppose I must except the SC.1) and he tells me that almost all fell within the range 9-19sec from brakes-off to lift-off. This in itself seems worthy of comment, in view of the fact that the speeds at wheels-off varied from less than 50 to more than 200 m.p.h. But what really interested him is that the aircraft which took longest (at 32sec it exceeded all other demonstrators by 10sec) was the Buccaneer—a highly efficient, blown-flap machine for carrier operation.

In practice, of course, this matters not at all, for in operational service this aircraft would always be catapulted, and it has already proved that it can be operated very successfully from HM aircraft carriers. Nevertheless, the statistics are surprising; it's something to do with thrust/weight ratio and the small wing needed for sonic flight at low level and the fact that the flaps don't blow on take-off and that none of the aircraft were fully laden and anyway it was raining.



Money for nothing? (see below)

● Above is a photograph of a model of a wallet. Inside the wallet is a spoof banknote promising to save the transatlantic jet traveller nearly £50 on or after October 1—the difference between the regular economy fare London - New York return and "TWA's special £125 17-day fare."

Quite a clever and original piece of advertising? Suggesting that there is *cost* competition on the North Atlantic and that it is not only better but *cheaper* to fly by one airline in preference to another? Answer No 1—yes. Answer No 2—no. Every other transatlantic airline—courtesy of IATA—is also offering reduced economy off-season jet fares between October and March. The only real differential fare is that introduced last March by the IATA traffic conference for propeller aircraft and which brings down the minimum transatlantic 17-day return fare to £114 6s 0d—comparable with the sea fare. Fly behind propellers and save yourself £60.

● I generally abstain from the more specialized literature of aviation medicine. But one or two passages in a paper delivered at the recent European Congress of Aviation Medicine fascinated me more than anything I have read for months. The physiologist responsible was a Russian, Dr A. Vorobiev. He said that on a landing approach the average Tu-104 captain's blood pressure was 22mm of mercury above that of his Il-14 (piston-engined) counterpart, and his respiration was anything between 12 and 19 breaths a minute faster. Another of Dr Vorobiev's findings was that functional changes were more acute in pilots flying passenger aircraft than in those piloting freighters of the same type over the same routes. He attributed the racing pulse and the quickened breathing to "an increased sense of moral responsibility."

● "SAC's Combat Crewmen Memorialized in Stained Glass" runs a headline in *Air Force and Space Digest: The Magazine of Aerospace Power*. The window is in the Strategic Air Command Memorial Chapel and the artist's own "interpretation" runs:

"Most prominent in the design is the Man, mature in mind and spirit, dedicated to the mission of preserving peace . . .

"Near the center of the window the symbol of the Strategic Air Command is shown, representing the guiding and coordinating force which makes it possible for devoted men to work together toward the end that man's dream of peace on earth may become reality. In portraying this we have taken the liberty of extending the lightning beyond the confines of the shield to emphasize SAC's vitality and far-reaching power . . .

"The main flight of aircraft is bathed in a golden light similar to the rays of light descending from God. . . ."

Quote

"I hope I'm not offending anyone when I say that I have always regarded Farnborough as rather bogus."—Sir Miles Thomas.

ROGER BACON

For sheer unity of purpose, Treble One Squadron, whose pilots I introduce here, are unsurpassed. In the air that is. But get them out of their Hunters and stand them in front of a camera and they just don't know which way to turn. And the most bewildered of the lot is the CO. I wonder what would happen if he stopped to scratch his head in a Pterodactyl loop

1 to 121

A Pictorial Record of de Havilland Aircraft

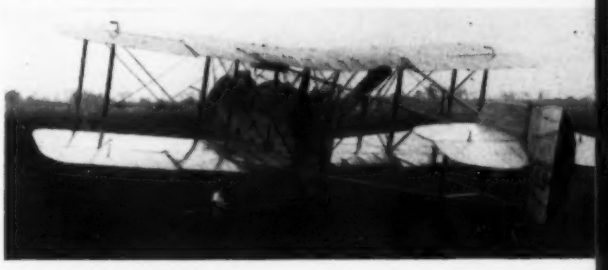
IN MARKING the 40th anniversary of The de Havilland Aircraft Co Ltd (it came into existence on September 25, 1920), we felt that we should combine a salute to the company with some worth-while contribution to aeronautical history. Anything approaching a complete pictorial record of the uniquely diverse and prolific range of D.H. aircraft, especially those constructed before 1940, has seldom been attempted; so here it is, up to the beginning of World War 2 at least—the great assembly of "Fours," "Nine Acks," Moths, Dragons, Rapides and types un-named. Landplanes, floatplanes, amphibians, bombers, fighters, lightplanes, airliners and racers. Absent, alas, are the D.H.81 Swallow Moth and D.H.92 Dolphin which never seem to have had their pictures taken—even by *Flight's* John Yoxall, to whom we are indebted for many, if not most, of the illustrations.

The Mosquito and subsequent types being familiar, we have chosen to represent them not by views of their multifarious variants (which would have been well-nigh impossible in any case) but by a single picture of each type, chosen for its pictorial and atmospheric qualities.

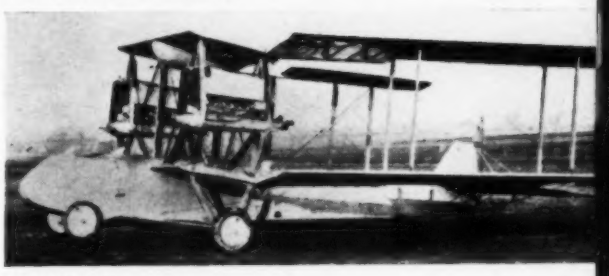
Though we have decided to fill almost the entire available space with pictures of aeroplanes, there is one man whose name seems imperatively to demand mention. But perhaps not . . . for his initials appear in these pages well over 100 times and his personal stamp appears in as many pictures.

D.H.1 prototype (Renault)

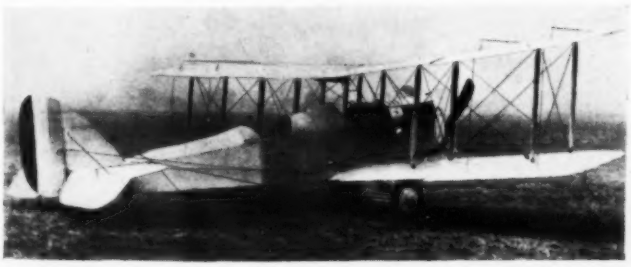
D.H.1a (Beardmore)



D.H.2 (Gnome Monosoupape)

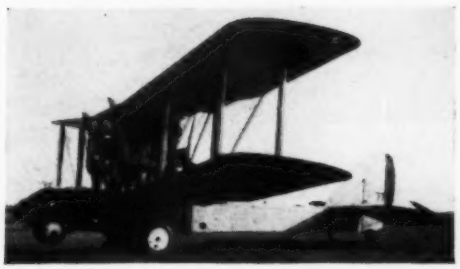


D.H.3 (Beardmores)



D.H.4 (Eagle)

D.H.4 floatplane (Eagle)



D.H.3a (Beardmores)

D.H.4a (Eagle)

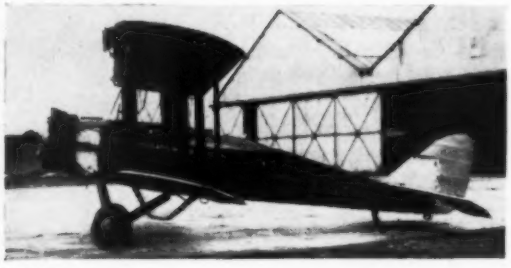
1 to 121 . . . *D.H.4R (Lion)*

D.H.9C (Puma)

D.H.5 prototype (Le Rhone)

D.H.9 floatplane (Puma)

D.H.5 (Le Rhone)

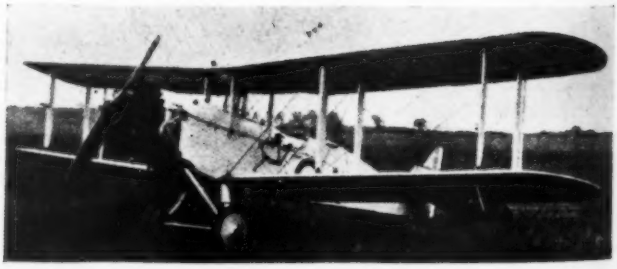


D.H.9J (Jaguar)

D.H.6 (RAF 1a)

D.H.9A (Liberty)

D.H.9 (B.H.P.)
D.H.9 (Lion)



D.H.9AJ Stag (Jupiter)
D.H.10 Amiens prototype (B.H.P.s)

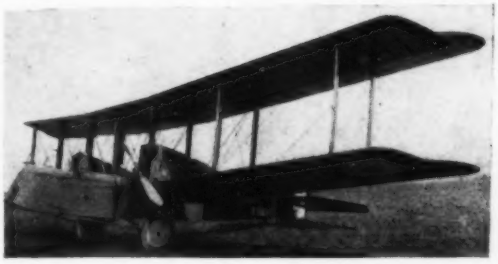
Civil D.H.10 (Liberties)

D.H.15 Gazelle (Atlantic)

1 to 121 . . .

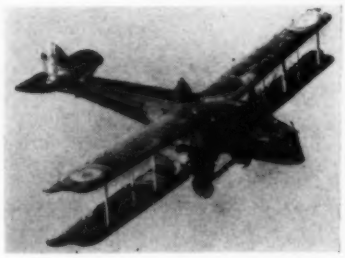
D.H.10A Amiens (Liberties)

D.H.16 (Eagle)

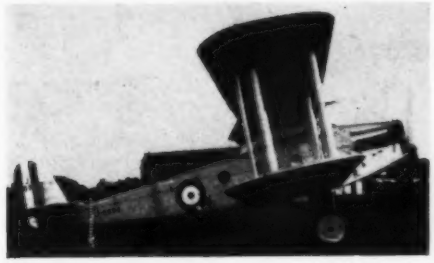


D.H.10C Amiens (Eagles)

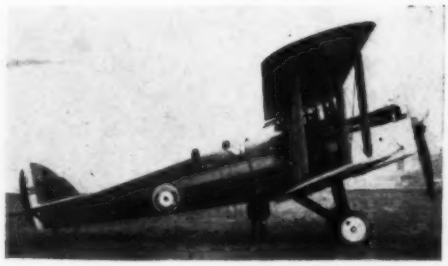
D.H.18 (Lion)



D.H.11 Oxford (Dragonflies)



D.H.27 Derby (Condor)



D.H.14 Okapi (Condor)
D.H.14A (Lion)

D.H.29 Doncaster (Lion)
D.H.34 (Lion)

D.H.37 (Falcon)

D.H.50J floatplane (Jaguar)

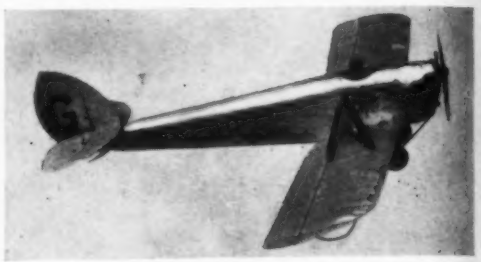
1 to 121 . . .

D.H.42 Dormouse (Jaguar)

D.H.51 (RAF 1a)

Note: After the D.H.60 Moth prototype the sequence of types is resumed on page 510; on the intervening pages are larger photographs of de Havilland machines from the Mosquito onwards.

D.H.42A Dormouse (Jupiter)



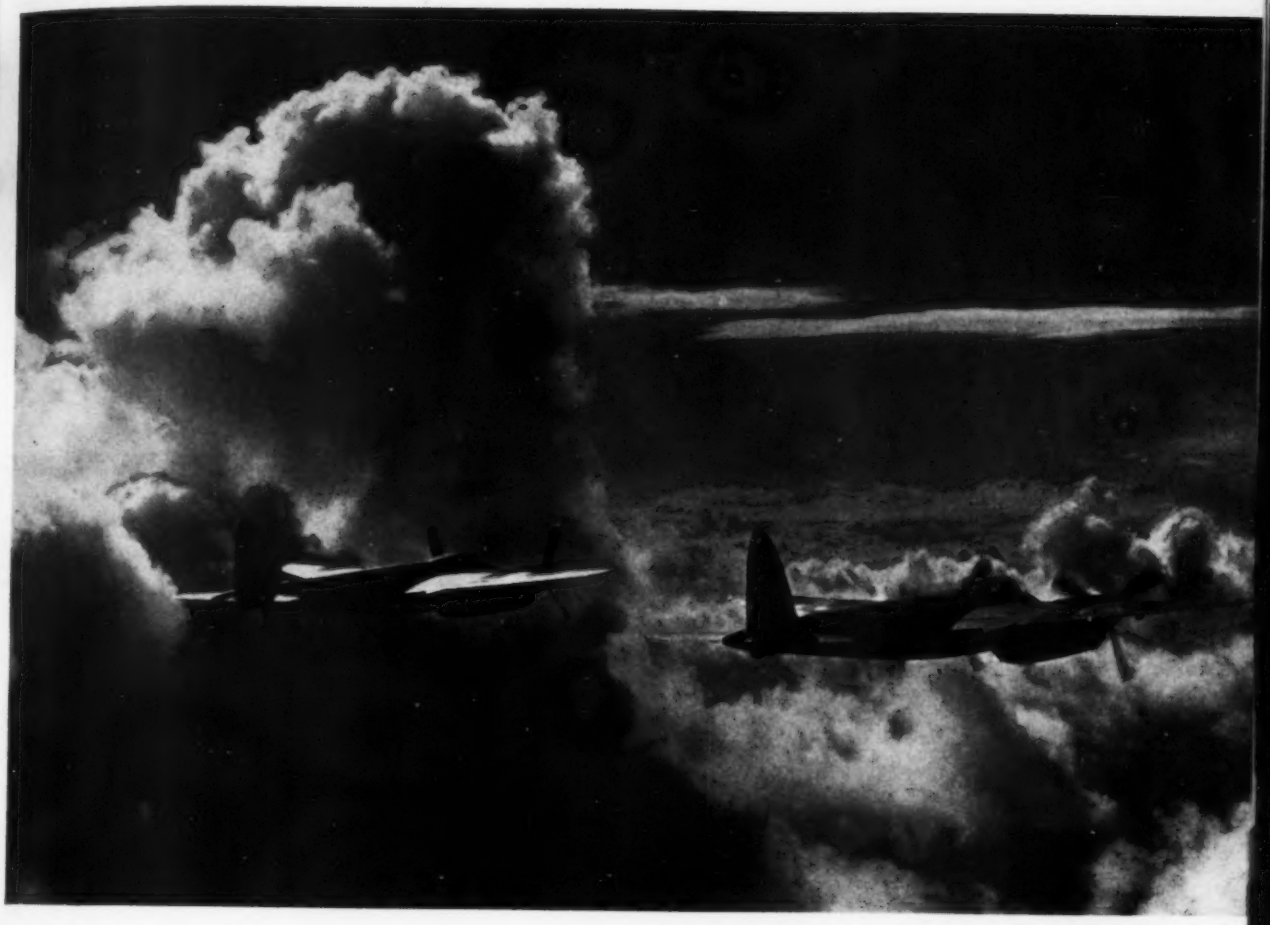
D.H.53 Humming Bird (Scorpion)

D.H.50 (Puma)

D.H.54 Highclere (Condor)

D.H.50 floatplane (Puma)
D.H.50 floatplane (Jupiter)

D.H.56 Hyena (Jaguar)
D.H.60 Moth prototype (Cirrus I)



D.H.98 Mosquitoes (Merlins)

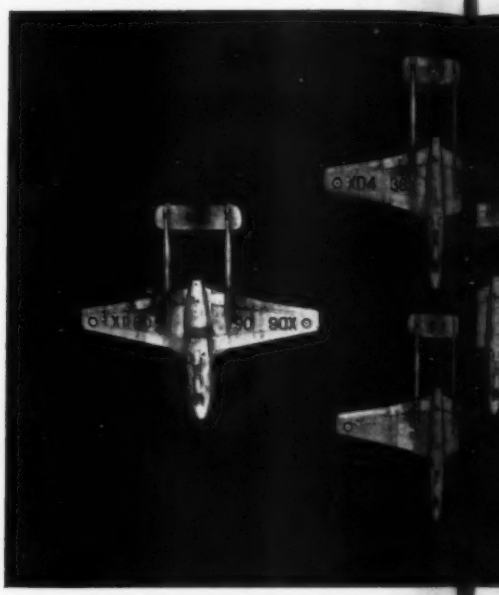
Below, D.H.103 Hornets (Merlins)

Right, D.H.103 Sea Hornet (Merlins)

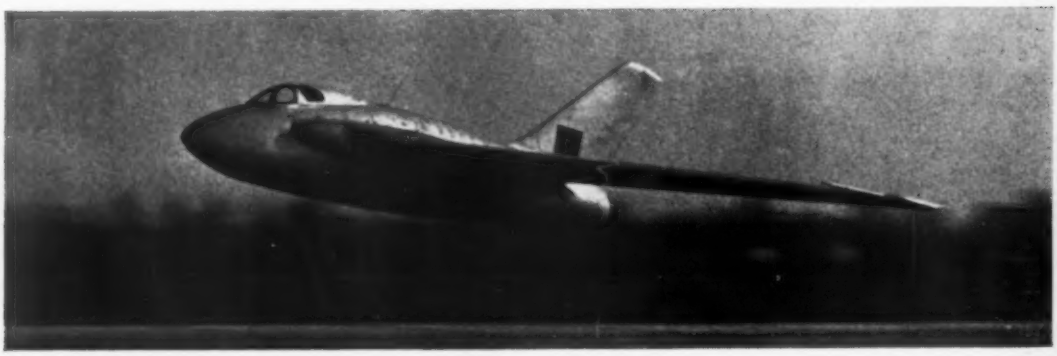
1 to 121 . . .

1 to 121 . . .

D.H.104 Dove (Gipsy Queens)



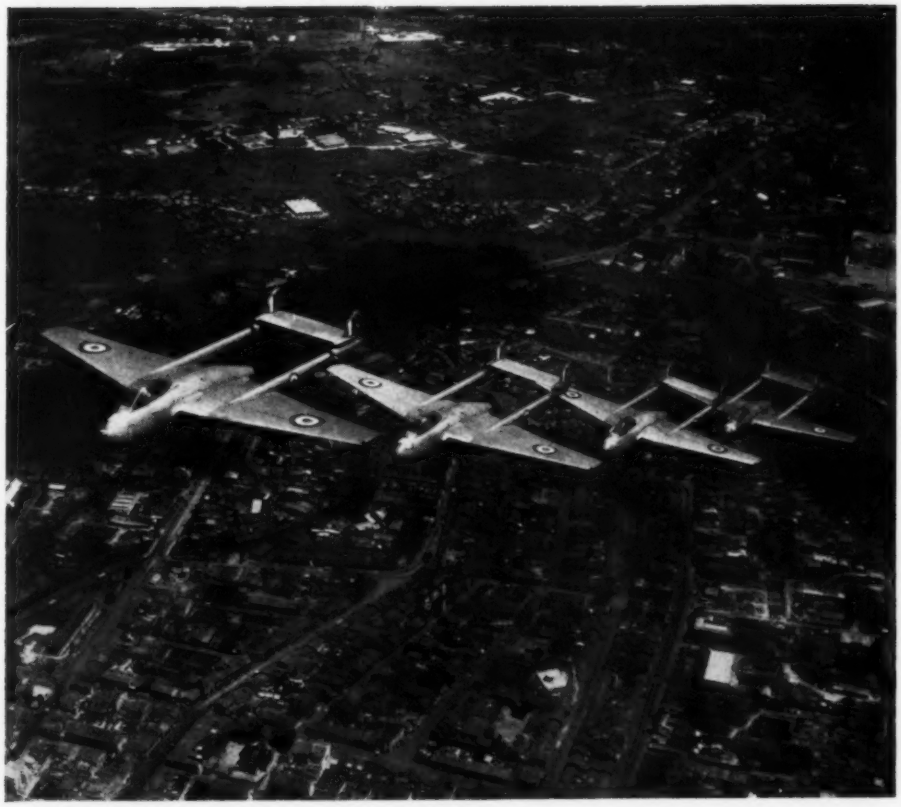
D.H.115 Vampire Trainers (Goblin)



D.H.108 (Goblin)

Right, D.H.113 Vampire Night Fighter (Goblin)

D.H.114 Herons (Gipsy Queens) (with Rapide)



D.H.100 Vampires (Goblin)

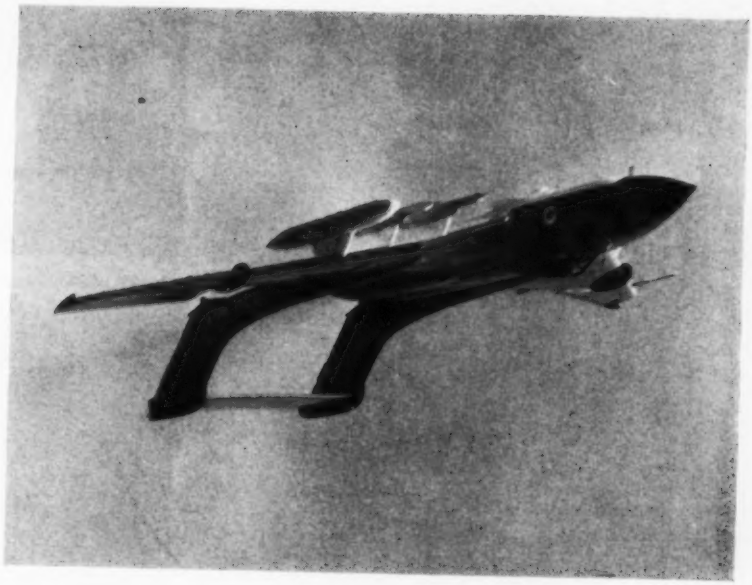
Below, D.H.112 Venoms (Ghost)

1 to 121 . . .

Right, D.H.112 Sea Venom (Ghost)

Below, D.H.112 Venom Night Fighter (Ghost)

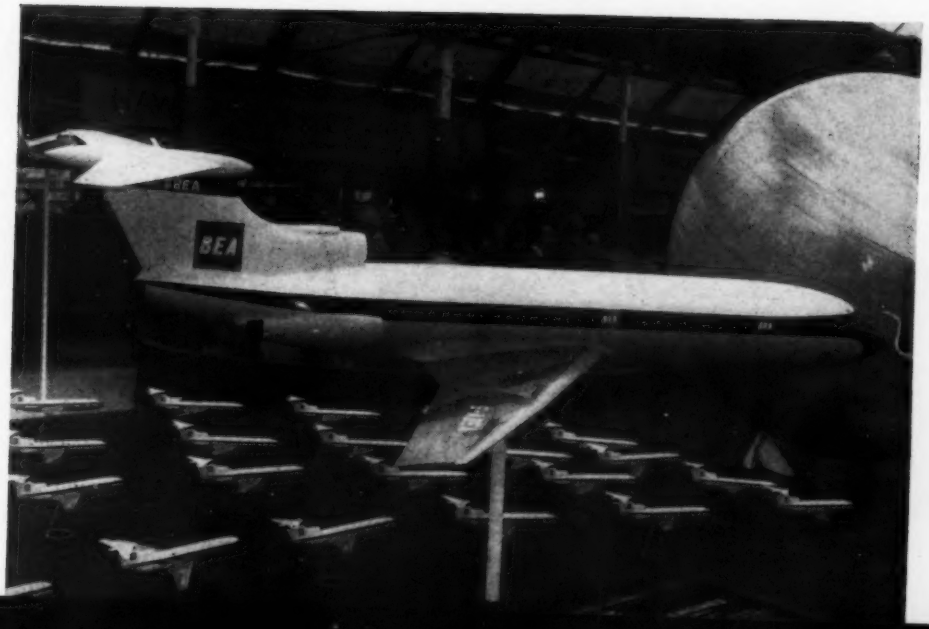
1 to 121 . . .



Right, D.H.110 Sea Vixen (Avons) inverted

Below, D.H.106 Comet (Avons)

Bottom, D.H.121 Trident (RB.163s) (model at Farnborough, 1960)



1 to 121 . . .

D.H.60 Moth (Genet)

D.H.60M Moth (Gipsy I)

D.H.60 Moth floatplane (Cirrus I)

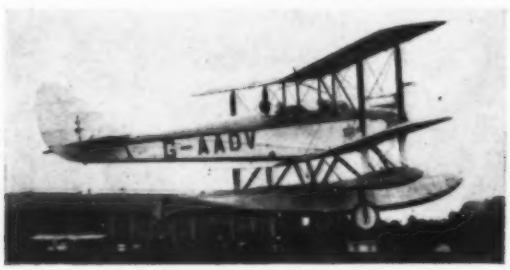
D.H.60M Moth single-seater (Gipsy II)

D.H.60X Moth (Cirrus II)

D.H.60T Moth Trainer (Gipsy I)

D.H.60G Gipsy Moth (Gipsy I)

D.H.60T Moth Trainer single-seater (Gipsy II)



D.H.60G Gipsy Moth amphibian (Gipsy I)
D.H.60G Gipsy Moth Coupé (Gipsy I)

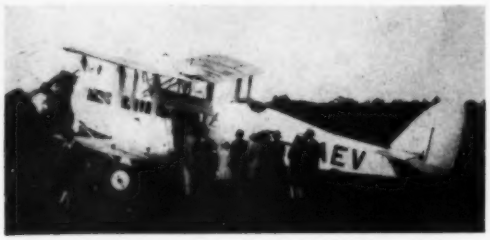
D.H.60GIII Moth Major prototype (Gipsy III)
D.H.60GIII Moth Major (Gipsy Major)

D.H.60T (Tiger Moth prototype) (Gipsy III)

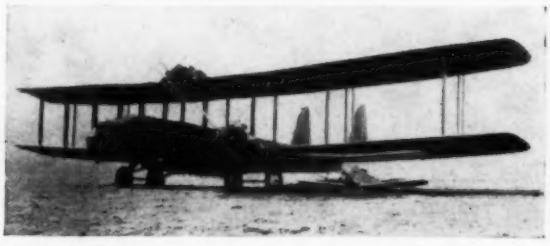
D.H.66 Hercules (Jupiters)

D.H.61 Giant Moth (Jupiter)

D.H.71 Tiger Moth (Gipsy experimental)



D.H.61 Giant Moth (Jaguar)



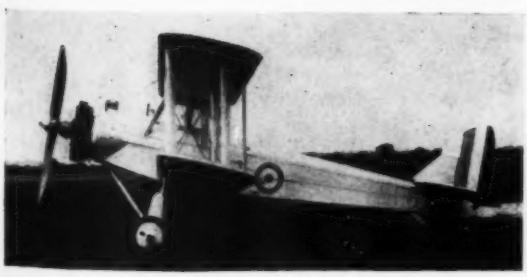
D.H.72 (Jupiter)

D.H.65 Hound (direct-drive Lion)

D.H.75 Hawk Moth (Ghost)

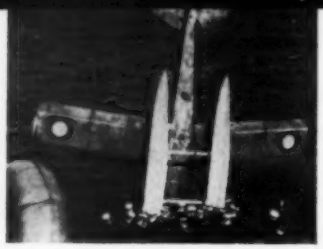
D.H.65 Hound (geared Lion)
D.H.65J Hound (Jupiter)

D.H.75A Hawk Moth (Lynx)
D.H.77 (Rapier)



1 to 121 . . .

D.H.80 (Puss Moth prototype) (inverted Gipsy II)



D.H.82 Queen Bee floatplane (Gipsy Major)

D.H.80A Puss Moth (Gipsy III)

D.H.83 Fox Moth prototype (Gipsy III)

D.H.80A Puss Moth floatplane (Gipsy III)

D.H.83 Fox Moth "Speed Model" (Gipsy Major)

D.H.82 Tiger Moth (Gipsy Major)

D.H.83 Fox Moth floatplane (Gipsy Major)

D.H.82 Tiger Moth floatplane (Gipsy III)
D.H.82 Queen Bee landplane (Gipsy Major)

D.H.84 Dragon prototype (Gipsy Majors)
D.H.84 Dragon (Gipsy Majors)

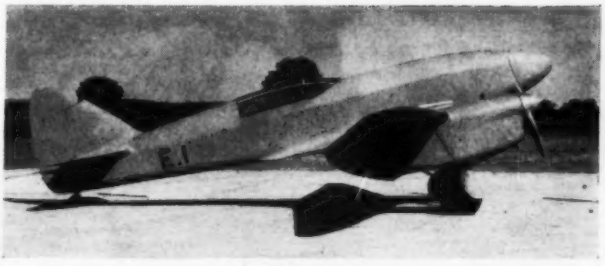
1 to 121 . . . *D.H.85 Leopard Moth prototype (Gipsy Major)*

D.H.87A Hornet Moth (Gipsy Major)

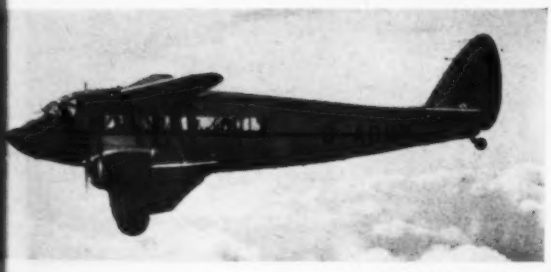
D.H.85 Leopard Moth (Gipsy Major)

D.H.87B Hornet Moth (Gipsy Major)

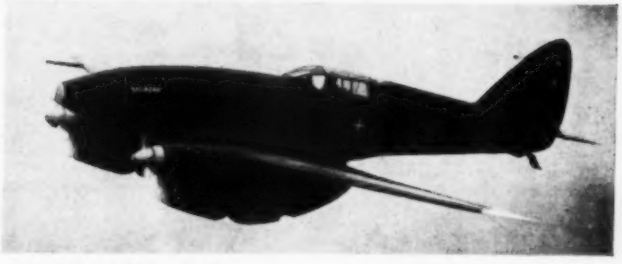
D.H.86 prototype (Gipsy Sixes)



D.H.88 Comet (first machine) (Gipsy Six Rs)



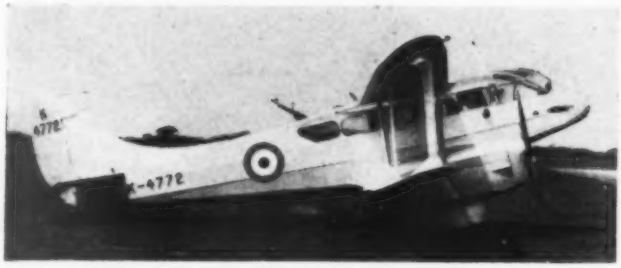
D.H.86A (Gipsy Sixes)



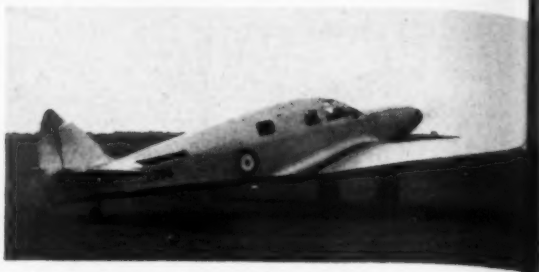
D.H.88 Comet (Gipsy Six Rs)

D.H.86B (Gipsy Sixes)
D.H.87 Hornet Moth prototype (Gipsy Major)

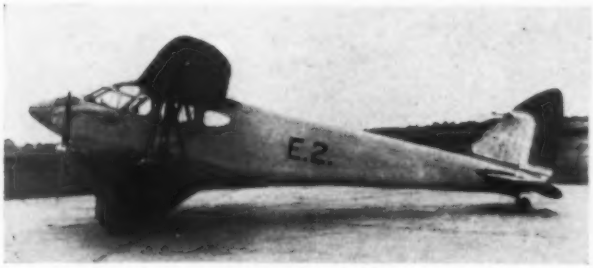
D.H.89A Rapide (Gipsy Sixes) (Service name Dominie)
D.H.89A Rapide 4 (Gipsy Queen 2s)



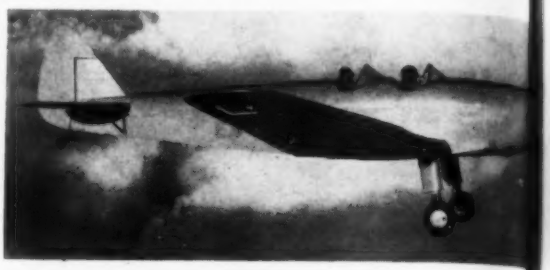
1 to 121 . . . *D.H.89M (Coastal Reconnaissance) (Gipsy Sixes)*



D.H.93 Don I (communications) (Gipsy King)

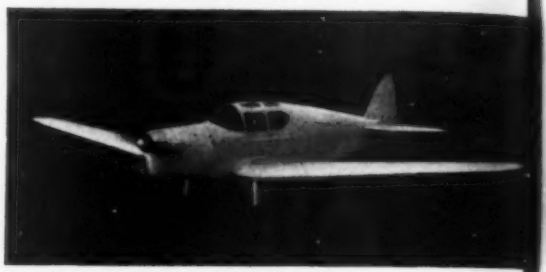


D.H.90 Dragonfly prototype (Gipsy Majors)



D.H.94 Moth Minor prototype (Gipsy Minor)

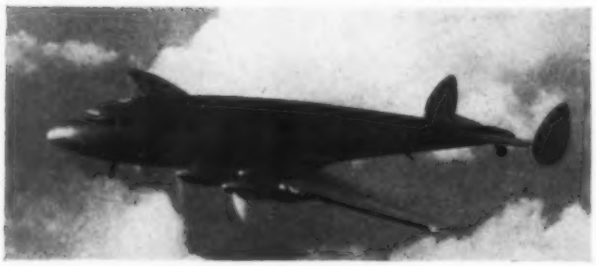
D.H.90 Dragonfly (Gipsy Majors)



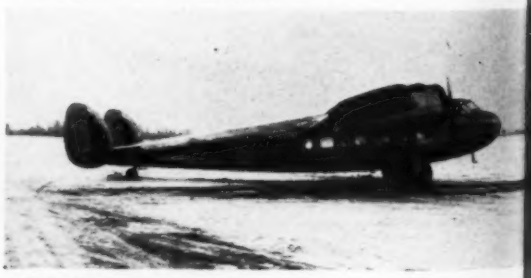
D.H.94 Moth Minor Coupé prototype (Gipsy Minor)

D.H.91 Albatross prototype (Gipsy Twelves)

D.H.94 Moth Minor Coupé (Gipsy Minor)



D.H.91 Albatross (modified tail) (Gipsy Twelves)
D.H.93 Don I (trainer) (Gipsy King)



D.H.95 Flamingo prototype (Perseus)
D.H.95 Flamingo (and Hertfordshire) (Perseus)

SERVICE AVIATION

Air Force, Naval and Army Flying News

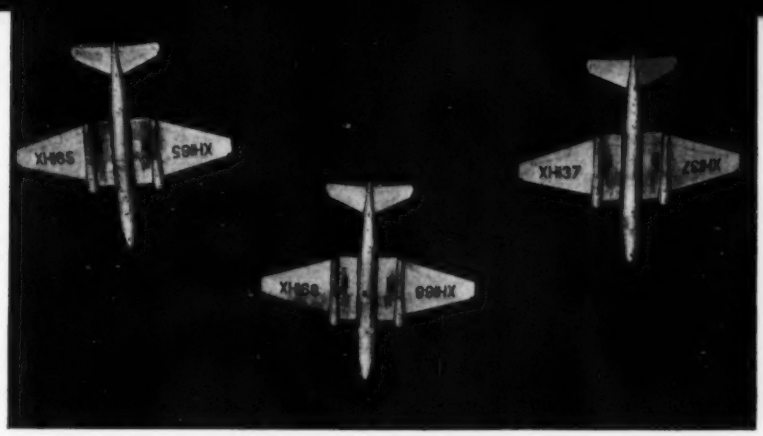
RAAF CAS-Designate's Tour

NEXT Wednesday (September 28) the Chief of the Air Staff-designate of the RAAF, AVM V. E. Hancock, is due to leave Los Angeles for Honolulu at the end of a fortnight's visit to the United States. Before returning to Australia early next month he will visit Malaya.

AVM Hancock, who is to become an air marshal when he takes over the CAS post from Air Marshal Sir Frederick Scherger on May 29 next year, began a world-wide tour when he left Sydney by air on September 2. His first port of call was the UK, where he went to the SBAC Show at Farnborough; then he visited France (September 8-10) before flying to Washington. One of the objects of his tour has been to see the types of fighter aircraft investigated by the RAAF mission which is now preparing a report for the Australian Government (a Reuter message from Canberra last week said that purchase of the Dassault Mirage III had been recommended); another, to have talks on the integration of SAGW and manned fighters (the RAAF's first SAGW squadron is to be equipped with Bristol Bloodhounds). Whilst in the United States, he was to fly a tactical mission in a Lockheed P2V-7, which the RAAF is to operate on maritime reconnaissance duties. AVM Hancock also paid a short visit to Canada.

He is at present AOC Operational Command, having assumed that post (in its previous designation as Home Command) in August last year. Prior to that he was AOC No 224 Group, RAF, in Malaya. For "leadership, energy and keenness" while with No 100 Sqn and later when commanding No 71 Wing during the war, he was awarded the DFC; in 1953 he was made CBE and he became CB in 1958.

The Lord Trophy, competed for annually by medium range transport squadrons (this page, last week), being presented by AVM D. J. P. Lee, AOC Air Forces Arabian Peninsula, to the CO of No 84 Sqn, Sqn Ldr H. W. Guile, at Khormaksar, Aden. The Trophy was presented to the RAF by the parents of Flt Lt D. S. A. Lord, who won the VC on supply dropping at Arnhem. This year marks the first occasion on which overseas squadrons have competed



Canberra PR.9s of No 59 Sqn, which is commanded by Wg Cdr N. C. Thorne and based at Wyton

Commemorating No 600 Squadron

A PLAQUE commemorating the achievements of No 600 (City of London) Sqn is to be unveiled at Biggin Hill airfield on October 22 by Air Marshal R. B. Lees, Deputy Chief of the Air Staff. It records that in Second World War operations the squadron destroyed 165 enemy aircraft, probably destroyed 13 and damaged 34. The plaque is being placed in the premises of the No 600 Sqn Flying Group, which was formed in 1958 to continue flying activities after the Royal Auxiliary Air Force squadrons were disbanded and operates from Biggin Hill. The group has 120 members and owns a Tiger Moth and a Prentice.

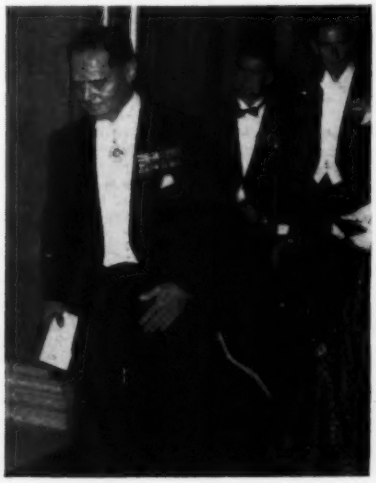
Nigerian Celebrations

VALIANTS, Jet Provosts, a Britannia and a Comet are to represent the RAF at Nigerian independence celebrations between September 29 and October 3. The force commander is AVM M. H. Dwyer, AOC No 3 Group, Bomber Command; and the deputy leader Wg Cdr B. P. Mugford, who commands No 7 Sqn, from which the three Valiants will be drawn. The Jet Provosts are from the Central Flying School, the four-man team led by Flt Lt Roy Langstaff which performed with such crisp aplomb at Farnborough (*Flight*, last week); the Britannia is from No 511 Sqn and the Comet from No 216 Sqn.

Next Thursday (September 29), the day of the National Pageant, the aircraft are to make a fly-past over Lagos race-course; and on the following day the Comet is going north to Kano to give flights to local dignitaries—in response to many requests. On Independence Day (October 1) the jet aircraft are giving displays at Sokoto, Kano and Joss; and there is to be a further display along the Lagos waterfront on October 2.

The RAF visit to Nigeria will culminate with flights over provincial towns, the Jet Provosts giving their final performance over Ibadan on October 3. The CFS team then go on to visit Accra, where on October 5 they are to take part in a Ghana Air Force display.

At the Air Council reception to representatives of "The Few" at Lancaster House on Wednesday last week: below, the Prime Minister with the CAS, Air Chief Marshal Sir Thomas Pike; and at right, Gp Capt Douglas Bader, followed by Gp Capt Hugh Dundas and Gp Capt Alan Deere



IN BRIEF

Air Cdre N. C. Hyde, who has been AOC the Federation of Malaya Air Force for the past two years, is to be Commandant of the RAF Staff College at Andover from October 3.

Two Shackleton MR.3s of No 206 Sqn leave St Mawgan for Buenos Aires next Sunday (September 25) to take part in the 15th annual aeronautical week of the Argentine Air Force.

During his visit to RAF Waterbeach on September 8 the Austrian Defence Minister, Dr Ferdinand Graf, saw four Javelin FAW.2s of No 46 Sqn "scramble" in under 60sec.

Two Valiants from No 90 Sqn, on a "Western Ranger" navigational exercise, gave a flying display at the Canadian National Air Show at Toronto on September 9 and 10.

Gp Capt W. F. Beckwith, an engineering specialist in the RAF Technical Branch, has been appointed Director of Weapons Engineering at Air Ministry with the acting rank of air commodore.

The aircraft carrier HMS *Victorious* became 21 years old on September 14 and celebrated her coming of age with a re-commissioning ceremony at Portsmouth. This week, she was sailing to the Mediterranean for trials prior to a Far East commission.

A Valiant of No 138 Sqn, based at Wittering, participated in Bermuda last weekend in celebrations marking the 20th anniversary of the Battle of Britain. The aircraft was captained by Gp Capt Leonard Trent, station commander at Wittering, who in May 1943 won the VC for leading a daylight attack on an Amsterdam power station.

Correspondence

The Editor of "Flight" is not necessarily in agreement with the views expressed by correspondents in these columns. Names and addresses of writers, not for publication in detail, must in all cases accompany letters.

Curtailed Corporation

MR. D. K. FOX, in your correspondence columns of September 9, objects to BEA's contraction of its full title, so properly commended by Mr Peter Brooks.

BEA has, of course, spent many hundreds of thousands of pounds in advertising its shortened name and it has today become known throughout the world as that of a most enterprising airline. Every time that a "C" is tacked on the end something is taken away from this proud trademark. Moreover, there is the possibility of confusion with BOAC.

The title BEA is shorter, sweeter and more positive than the full initials could be, and surely the corporation is entitled to be known by any contraction it prefers—as are PanAm, BP, and BKS, to quote three samples at random. Who normally refers to them as "PAWA Inc.," "TBPCL" or "BKSATL?"

It has always been BEA for my money!

London W1 PETER G. MASEFIELD

The Work of the BIS

I THINK that the views expressed by Kenneth Owen (editorial footnote to my letter, Correspondence, August 19) must have come from people unfamiliar with this Society, for they omit a number of important points:—

(1) Our non-professional membership has, in the past, been very large and this has been most desirable in the absence of any professional interest in astronautics, for it is only during the last few years that the science has become respectable. The non-professional members have financed the relatively small technical membership to produce a large number of original papers which have greatly influenced subsequent thought on the subject.

(2) The change occurring in our membership grades has been brought about by increasing professional interest and the fact that popular and semi-technical news in astronautics is now widely available elsewhere. This has caused the big increase in our professional grades over the past few years and is bound to increase in the future. However, even at the present time the Society undertakes a dual purpose in so far as it endeavours to reach many people who have a legitimate interest in astronautics, though not in a technical sense, for the Society has a long-standing interest in the social consequences of spaceflight.

(3) The technical standards of the Society have always been of the highest, and considerable experience has shown how rapidly individuals change their preconceived notions when they are confronted with our publications and details of our work. For example, we are increasingly concerned with holding specialist symposia besides a wide variety of meetings aimed at non-specialist audiences, frequently put on with the co-operation of local organizations.

(4) Our views have also been put forward in official quarters on more than one occasion. Many of these are listed in a small pamphlet we have produced and which explains fundamental aims of spaceflight. I shall be glad to send copies of this to any of your readers who might be interested or who might like to see for themselves copies of our other publications. [The address is 12 Bessborough Gardens, London SW1.—Ed.]

These facts alone ought to ensure that the Society's effectiveness is not influenced adversely by a non-professional membership. Of course, they may do little to affect preconceived ideas from persons who do not trouble to go into the matter fully, but this is a tribulation which must affect everyone at one time or another; and it is as much a human attribute as the enthusiasm of many non-professional members who have supported us for many years and been content to know that they have enabled us to publish material of high quality and content, much of which has withstood the years.

London, SW1 L. J. CARTER,
Secretary, the British Interplanetary Society

BOAC and MEA

I CAN assure the writer of "BOAC 1959-60: a Postscript" (page 225, *Flight*, August 12) that no "book-keeping" adjustments have been made by MEA to achieve improved results in 1959.

The improvements and the profit are real enough, with steady increases during 1959 in almost every revenue-earning aspect of MEA's activities—Viscount daily utilization up by 25 per cent (it is now running at 9.55 hours, a further increase of 14 per cent for the first six months of 1960 compared with the same period in 1959); passengers carried (148,253) up by 42 per cent.

Other percentage increases for 1959 over 1958 were: Total revenue, 29; hours flown, 13; freight carried (tons), 54; excess baggage (tons), 26; mail carried (tons), 42; LTMs (passenger services), 35.8; revenue per employee, 28; CTMs per employee (passenger services), 23.

In fact, since 1955 every statistical item by which an airline's success and viability can be assessed has shown an increase despite a temporary financial setback caused by the Lebanese crisis of 1958. The only declining figure during this period has been the DC-3 utilization—these aircraft are now more or less obsolescent as far as MEA is concerned.

In 1959 MEA carried over 32 per cent of all passengers arriving or leaving Beirut Airport and over 60 per cent of the total number of passengers carried by all Lebanese airlines.

All these improvements have been achieved without incurring additional costs. MEA is a low-cost operator—in terms of capacity ton-miles in pence, its operating-costs figure of 32.9 was below those of both British corporations, Air France, Sabena, Swissair and KLM, to mention a few carriers whose costs were included in the Report by the Select Committee on Nationalized Industries.

It should be emphasized also that MEA provides certain benefits for BOAC, including feeder and interline traffic and protection of the corporation's traffic rights in and out of Beirut. These benefits, according to BOAC estimates, are worth over £1½ million a year. In addition, MEA has, since 1959, bought over £5½ million worth of British equipment. The recent purchase of Comet 4Cs by MEA will mean a payment to the British aircraft industry of a further £6 million or so.

BOAC, as a partner in MEA is, of course, aware of all the latter's traffic statistics and of its operating position; but what the corporation shows, or does not show, in its accounts is entirely its own affair. All the figures mentioned in this letter have been available, and issued, to the Press in this country.

The article also states that "a well-run airline should be able to turn its capital over at least twice a year." MEA can certainly do that—and much better.

London W1 FRANK O'SHANOHUN,
Public Relations Adviser, Middle East Airlines

[BOAC's accounts for 1959-60 show that the corporation's position in regard to MEA has improved to the tune of close on £2m. A loss on its investment of £1¾m in 1958-59 was converted to a profit of £17,000 in 1959-60. MEA has always argued the propriety of accounting that £1¾m as a "loss"—hence our suggestion that not only may MEA's traffic and revenue have improved but that its book-keeping point had been won as well.—Ed.]

THE INDUSTRY IN BRIEF

SASCO Group announce that Wg Cdr H. G. Cattell, DFC (RAF Retd), MSMA, has become a director of the parent company, Stewart Aeronautical Supply Co Ltd, continuing as general manager of the group; and Mr W. H. Frost, AFRAeS, has been made a director of Electrocon Ltd, continuing as chief engineer.

Mr Ken Oram has been appointed manager of the recently formed general aviation department of de Havilland Aircraft Pty Ltd, Bankstown, NSW. This department will control civil aircraft sales, servicing and spares requirements for the Beechcraft range as well as D.H. Doves, Beavers and Otters. Before joining the company, Mr Oram spent two years with Qantas as technical training controller.

Further price reductions for wrought titanium announced by I.C.I. Metals Division bring the figures to well under half the levels in 1954, when I.C.I. first began selling the material. The reductions become effective on November 1, when typical prices per lb will be (today's price in brackets): 1in hot-rolled plate, 49s (54s); 20 s.w.g. alloy sheet, 135s (150s); 8in bar and billet, 48s (55s); extrusions, 90s (105s).

Under an agreement between Plannair Ltd and the Lear-Romec division of Lear Inc, Elyria, Ohio, the American company will be able to manufacture the full range of Plannair blowers for marketing in the USA and Canada.

Dowty Group Ltd have acquired Designex (Coventry) Ltd, a company specializing in the design and manufacture of multi-spindle tooling and special purpose equipment. The chairman is Mr J. C. G. Wegerif and the managing director Mr E. G. Gibbons.

No 10 of the 21 new instruments which Southern Instruments Ltd (Frimley Road, Camberley, Surrey) are introducing to celebrate their 21st year is the M1149 portable tachometer. Two versions are available, covering 0 to 30,000 r.p.m. and 30,000 to 300,000 r.p.m. respectively.

Simmonds Aerocessories Pty Ltd has been renamed Firth Cleveland Pty Ltd, and Mr J. R. Burt has been elected chairman. The company will be responsible for the manufacture and marketing in Australia of—among other products—Simmonds self-locking nuts and Spire Speed fastenings.

AIR COMMERCE

THE first part of this week's Air Commerce section is devoted to news and reports from "Flight's" representative at the 16th Annual General Meeting of IATA, which took place from September 12-16 in Copenhagen with SAS as the host airline, and with the King and Queen of Denmark attending the opening ceremony (right).

HORSE-TRADING AT COPENHAGEN

EVERY airline in IATA wants to expand, and it can only do so internationally by getting more traffic rights. One of the strongest impressions gained at Copenhagen was the growing resentment by airlines at the increasing tendency towards restrictionism and protectionism. The host airline, SAS—if last week's Danish newspapers accurately reflect the feelings of this airline—is particularly bitter with the Americans. During the week of the IATA a.g.m., negotiations were going on in Copenhagen City Hall between the civil aviation authorities of the Scandinavian governments and of the US (i.e., the CAB and the State Department). The American attitude is a startling reversal of previous US policy, which has always been based on the Bermuda principles of no limitation of capacity or frequencies. If one party to a bilateral agreement appears to be running the other off a route then, according to these principles, there should be a review of the situation. Now the American authorities, lobbied, it is said, by the ATA, Pan American and TWA, are resorting to the restrictionism that they have in the past deplored in others.

Thus the remarks of the Danish Prime Minister, Mr Viggo Kampmann, at the opening session of the IATA a.g.m. were of unusual significance, since such occasions are often ones for banality rather than for controversy. "It is with no little uneasiness," he said, "that we in the north have noticed the considerable restrictions that have been imposed recently upon the traffic rights of airline companies. This development has meant a break in the efforts at liberalization made by the aviation countries since the end of the last world war, both in the multilateral and the bilateral sectors. . . . It is to be regretted if the same countries now carry out a completely contrary policy in the field of aviation which holds such great possibilities of expansion."

On the same occasion the retiring president of IATA, Mr S. Yanagita of Japan Air Lines, concluded by saying: "I respectfully submit there must be freedom of the skies, everywhere. Under free skies, all men can meet and trade with each other with trust and mutual respect. In the jet age, international aviation can only prosper in open skies. We will progress no further until all air routes throughout the world—on the European continent and in Asia—are freely opened. Until all airplanes in our skies are accessible to all men who fly in peaceful pursuit of international commerce, there cannot be trust; there will not be respect. The challenge of the jet age is freedom of the skies."

These last are surprising words to come from Japan, which is a "have" nation in air transport, having much in the way of traffic rights to bargain with other airlines. Perhaps Mr Yanagita was directing his remarks at the USSR, across whose territories Japan Air Lines wish to link Japan with Europe, cutting many miles and many hours off the transpolar and trans-Indian routes. Asked later when JAL will inaugurate its service to London, Mr Yanagita said possibly in June of next year, though much depended on the routing—whether it was to be via Hamburg or Copenhagen. Did JAL require "beyond" rights out of London? "Like many other airlines," he said, "we would like a round-the-world route."

Strains on the generosity of British traffic rights negotiators are likely to come also from other quarters—from Alitalia, for example. Asked whether Alitalia is happy with the present bilateral agreement between the two countries, Count Nicolo Carandini, president of the airline, compares the three services per week between London and New York enjoyed by Alitalia (DC-8s), with an arrangement to increase frequency by one service per year, and the fifth freedom rights beyond Rome enjoyed by BOAC and BEA —*two* British carriers. These rights the Count describes good-humouredly as "lavish and to unspecified destinations."

It is no secret that the Italian Government feels that the Anglo-Italian bilateral agreement, negotiated originally after the war and modified several times subsequently, no longer provides for an equitable sharing of rights between the carriers of the two countries. "When you put the rights of each side in the balance," says Alitalia, "there is a heavy weighting towards the British."

THE FUTURE OF AIR UNION

HAS some of the fire gone out of the efforts by Air France, Lufthansa, Alitalia and Sabena to translate into reality their visionary ideal of unity under the Air Union banner? The best people to answer this question are, of course, the members themselves, all of whom were at Copenhagen.

Each of the four emphasizes that the enthusiasm remains: if it is possible briefly to define the reason for the repeated postponements, it is that the will is there but the way is difficult to find. M. Gilbert Périer, chairman of Sabena and co-ordinator of Air Union, emphasizes that Air Union is still moving forward, and he hopes that it will come about. It is not, he says, the politicians who are holding things up; on the contrary, the ministers of the various countries are urging the airlines on. Are the difficulties legal, economic or technical? "It is all of these things," he says, "and I think that one of the difficulties also could be the different standards of living in the four countries concerned."

These views appear to be shared by Count Nicolo Carandini, president of Alitalia, and by Ing. Bruno Velani, chief executive of the Italian airline. Count Carandini emphasizes that the enthusiasm is "still very much there—we all want it to come about. And we are not apologising for the fact that a step of this magnitude has not come about after such a relatively short period of discussions." The difficulty, he explains, is the setting up of the machinery. It was one thing to agree on principles, but it took time to commit them to paper and to agree on the details. Was there still a possibility that, as had been tentatively planned, Air Union would co-ordinate its transatlantic schedules next April? Neither of the two Alitalia executives was able to confirm this. Would each carrier retain its national identity when Air Union came about? "Yes, most certainly": the name of each carrier, and the goodwill and so forth that attaches to it, would not disappear.

To the question whether Air Union will tend to become a traffic rights bloc, perhaps to the detriment of BOAC and BEA, Count Carandini says: "I must emphasize most strongly Air Union is against nobody. We are forming it because we can no longer afford to engage in stupid, deadly, wasteful competition with each other. Air Union is open to anyone who wishes to join." This, he says, includes BEA and BOAC.

NEW CUNARDERS TO NEW YORK?

CUNARD EAGLE intend to apply for a licence to operate scheduled passenger services across the North Atlantic, it was learned in Copenhagen, and will do so as soon as the new licensing regulations are in force. The licensing of a second British carrier on the world's most competitive international route is, of course, a matter that will be decided by the Air Transport Licensing Board, and it may be expected that BOAC will oppose the granting of a licence to Cunard Eagle. An Eagle application to operate scheduled freight services across the Atlantic was recently heard by the Air Transport Advisory Council, but their recommendation on this application has not yet been made known.

It was made clear last week by Mr Harold Bamberg, chairman of Cunard Eagle, that it is too early to say whether the proposed

AIR COMMERCE . . .

IATA's executive committee and officers at Copenhagen were, seated l. to r., Gilbert Périer, Sabena; Dr Walter Berchtold, Swissair; Warren Lee Pierson, TWA; Charles E. Beard, Braniff; Sir William Hildred, director-general of IATA; J. R. D. Tata, Air-India; Gordon R. McGregor, TCA; Seijiro Yanagita, Japan Air Lines; Sir Hudson Fysh, Qantas; Sheikh Najib Alamuddin, MEA; Lord Douglas of Kirtleside, BEA; General I. A. Aler, KLM; and Ake Rusck, SAS. Standing l. to r. are Prof John C. Cooper, legal adviser; A. Lawrence Young, secretary; Stanislaw Krzyczkowski, technical director; Dr Henry J. Gorecki, treasurer and financial director; Gregorio Obregón, Avianca; J. G. Grové, SAA; Max Hymans, Air France; and Ruben M. Berta, Varig. A member not present was John C. Leslie, PanAm

new services will be operated in pool with the corporation as will his airline's services (first-class, economy and the bi-monthly Skycoach) to Bermuda and Nassau beginning with Britannias next month. The final agreement on this pool, which has been under lively discussion since last March, has still not, it is understood, been reached. Asked what kind of equipment Cunard Eagle would use for Atlantic passenger services, if these are granted, Mr Bamberg says: "We shall buy the very best that is available."

He explains that Cunard Eagle is not entirely against pooling, which is something that has to be accepted as "an established fact of air transport life today." But he feels that the new Licensing Board must accept the fact that the principle of "two's company, three's a crowd" does not necessarily apply in a pool. The fact that two airlines are together in a pool should not, he feels, exclude the entry of a third, and it seems reasonable to speculate from this that Eagle are planning also to develop and expand their European scheduled-services network in parallel with BEA.

Mr Bamberg considers that one advantage of pooling is the possibility of joint selling, though he feels that a pool is abused if traffic rights are used to exclude a third airline. So far as the Bermuda/Nassau arrangement with BOAC is concerned, Cunard Eagle have made it clear that this pool will in no way mean the surrender of their independence. He hopes that both corporations will come to accept the Minister's philosophy that Britain's air transport should not be a monopoly.

NEW YORK AND THE ROTODYNE

THOUGH the Westland Rotodyne promises to be "the type of aircraft that appears to meet New York Airways' requirements" from 1964 onwards, and though the provisional order for 15 aircraft still stands, NYA is not encouraged with the progress that is being made. Asked at Copenhagen last week about his Rotodyne plans, New York Airways' president, Mr Robert L. Cummings, said: "The Rotodyne promises to be the aircraft we need, but what disturbs me somewhat is that in the two or three years since the prototype first flew there has been no progress towards production."

Mr Cummings appreciates that there are extenuating circumstances as a result of the reorganization under Westland of the British helicopter industry, but he feels that by now some progress should have been made towards putting the Rotodyne into production. He thinks that the noise problem can be solved so as to make the Rotodyne suitable for operation by New York Airways, meeting the noise limitations of the Port of New York Authority. He is keeping in touch with BEA, and so far as Westland are concerned, it has not been suggested to him that something other than the Rotodyne might be more suitable for NYA.

He indicates—based on the experience of his fleet of five 15-seater twin-rotor single piston-engine Vertol 44Bs—a predilection for twin-rotor stability in the bigger-sized helicopter, and he says he is looking forward to delivery in May and June next year (perhaps in February of an uncertificated aircraft) of 10 Boeing V107s (with the emphasis on the name Boeing). These twin-turbine T58 25-seaters, cruising at 155 m.p.h. and with all-weather capability, promise to bring about a big improvement in the economics of NYA's operations. Has Mr Cummings been to Moscow to see Aeroflot's expanding helicopter operations? No, not yet, though he has been invited and hopes to go. He says that he does not know how much information about the big Mi-6 80-seater helicopter is available—but "I can't help wondering," he adds "whether it doesn't look something like the sort of aircraft that NYA might one day need."

SUPERSONICS AT COPENHAGEN

NO airline has ever actually protested at suggestions that the introduction of supersonic transports should be delayed until after 1970. The reason is simply that present aircraft must be fully utilized and depreciated. In saying this in Copenhagen the chairman of IATA's technical committee, Mr Knut Hagrup of SAS, added that he did not think the ground facilities would be ready by 1970. Also IATA thought that the automatic landing of supersonic airliners was essential, since it would be too expensive to divert these aircraft.

IATA's recently appointed Supersonic Transport Advisory Group was, Mr Hagrup said, "drawing up a specification so that we are not taken by surprise. We want to avoid the repetition of what happened when Pan American ordered the 707 and everyone else signed on the dotted line virtually without seeing the aircraft concerned." This group was, he said, composed of five very senior IATA people—all engineering vice-presidents—and IATA's supersonic symposium would take place in May in Montreal. It was expected that 600-700 people would attend. IATA's 1961 technical conference would in fact be devoted primarily to the investigation of every possible aspect of the supersonic aircraft, and the work of the advisory group had three aims: (i) to ensure that airlines will have a clear idea of what their needs will be; (ii) to ensure that when a supersonic aircraft does arrive, it will be tailored to fit these needs; and (iii) to ensure that the potential deficiencies in support equipment, aids and facilities can be pinpointed in order to avoid future bottlenecks.

Asked whether IATA airlines could agree to avoid a supersonic "rat-race," Mr Hagrup did not deny that it would be hard to prevent one airline going ahead on its own—"but there is the point that no manufacturer could go ahead with an order for only 20 of these aircraft from one airline."

POLICY ON JET POLICIES

THE percentage of aircraft insurance premiums allowed as commission to brokers should, IATA's financial committee recommends, be "re-assessed." The airlines feel that the "responsibility and workload of brokers have not increased in the same degree as the increase in premiums." Asked to enlarge on this in Copenhagen last week, Dr H. J. Gorecki, IATA's financial director, said that airlines do not necessarily know the amount of such commissions, which are included in the premiums they pay to insurance companies. But if he had to "put a figure on it" he would say that it ranged between 3 and 10 per cent depending on what type of service the broker performed.

The trend towards self-insurance was also a subject of some discussion in Copenhagen last week. It was noted that some large airlines are tending towards self-insurance "rather than pay steeply rising premiums." But IATA has not been able to agree on the formation of a mutual insurance scheme. The reason for this, explains Dr Gorecki, is that some airlines have better safety records than others, and there is the question of agreement on individual contributions to the financing of any IATA insurance house. Some airlines would inevitably be reluctant to contribute to the insurance of higher-risk airlines than themselves. "We tried a similar system with the bonding of agents," said Dr Gorecki, "but it ran at a loss and there was a lack of understanding and co-operation."

There is no doubt, he says, that insurance companies are losing business as a result of the trend within the airline industry towards self-insurance. He feels that future experience may show that jets are safer. The actual premium on a new jet, depending on the risks involved, might be anything between 1.5 and 8 per cent. And there is the point—made by Mr Bernström of SAS—that amounts set aside as self-insurance are taxed by some governments as a distribution of profit. Another point, he says, is that

too heavy a degree of self-insurance can make loan-financing difficult to obtain. But he will not be surprised if Air Union gets together on self-insurance.

Putting things into perspective, the airlines are more concerned, says Dr Gorecki, about government user charges—landing fees and so on—than they are about insurance fees. "We have no powers of bargaining here," he says. "We can only protest." In Scandinavia, where fees are among the highest in the world, says Mr Bernström, SAS pays three times in Stockholm what KLM pays in Amsterdam. Fees vary widely—from $500 for a DC-8 to $50 for a DC-4 at the same airport. "Increases in government airline user charges," Dr Gorecki says, "are like measles: they spread all over the world." IATA, he adds, "doesn't want to pay for airports with bronze doors and gilded staircases."

JP4 OR KEROSINE?

AMONG the many matters on which IATA's technical committee reported to the Copenhagen annual general meeting was the controversial question of the wider use of gasoline-based JP4 fuels rather than kerosine.

Asked about the remark that had recently been made in a certain quarter to the effect that any airline that uses gasoline-based fuels "ought to be had up for manslaughter," the chairman of the IATA technical committee, Mr Knut Hagrup of SAS, said: "It is not possible to say which is the safer fuel. Nobody can say that one is safer than the other. They just cannot. The point is that if JP4 tends to become cheaper—it isn't now but it may become cheaper—then we must be ready for it. I think that anyone who may have said such a thing did not know his subject as well as he might have done."

ADJUSTING THE FARES MACHINERY

THE relationship between the executive committee of IATA and the Association's traffic (i.e., fares) conferences is undergoing significant changes. Matters came to a head in July when Sir William Hildred, director-general, dismissed Mr John Brancker, traffic director—an action which did not meet with universal acclaim within IATA. At the traffic conference now under way in Cannes, Sir William himself has assumed the functions, *pro tem*, of traffic director.

It is possible only to speculate on the reasons for the changes now being made in the machinery responsible for carrying out the most important of all IATA's functions, the fixing of fares. The traffic advisory committee has, in the past, advised the director-general and the traffic director and has acted as a steering committee for the traffic conferences. The director-general referred in Copenhagen last week to "a reorganization of relations between the executive committee and the traffic conferences on the one hand, and the traffic conferences and the traffic advisory committee on the other hand." Sir William emphasizes that "the traffic conferences will remain self-contained bodies. There will be no change in this respect in relations between the executive committee and the traffic conferences."

An important change in IATA's unanimity rule, to avoid all-cargo lines vetoing passenger fares, is that there will now be separate voting on passenger and cargo rates.

Footnote: IATA is to expand its squad of fares-enforcement officers. A recruiting drive over the past four months has increased the number from eight to 22, according to Sir William Hildred, who says that though the question of higher fines had been discussed these remained unchanged. "Some spoke strongly in favour of higher fines and others felt it better to pay up and shut up." Something like $80,000 would be required to pay the extra enforcement officers' salaries: the enforcement office's total budget for last year was about $\frac{1}{4}$ million.

JAPANESE JETS TO LONDON

FROM October 1 the Japan Air Lines/Air France transpolar services between Tokyo and Paris, at present operated by one weekly Air France Super Constellation and one weekly Air France 707, will both be operated by Air France 707s. The Japanese carrier has five DC-8s on order, of which two are delivered, and it hopes to introduce its own DC-8s on this route in June of next year, by which time all five will have been delivered (the third is due next week and the fourth late in November.)

So far as JAL's service to London is concerned—the subject of discussions last week in London between the civil aviation authorities of Japan and the UK—the actual date has not yet been decided, but it is possible that it will be in June or soon afterwards. Naturally JAL wish to have "beyond" rights from London for transatlantic services to the US, linking eventually—perhaps in 1964—with services to the US west coast from Japan to give the airline a round-the-world route.

The three Convair 880 22Ms that JAL have on order will be used for services between Japan and Europe via India. They will also be used to replace DC-6Bs in South East Asia and possibly also the DC-4s and DC-7Cs at present used for domestic services. Mr S. Yanagita, president of JAL, told *Flight* last week that JAL hopes to operate a service to South America in two or three years' time and eventually a service also to Australia. Negotiations for a trans-Siberia route to Moscow had so far not met with success, but his airline definitely wanted to open up the route from Japan to Moscow. (This could well be what Mr Yanagita had in mind during his address at the opening session of the IATA a.g.m.—see "Horse-trading at Copenhagen," page 517.)

FROM ATAC TO ATLB

DETAILS now published by the Ministry of Aviation clarify arrangements for the transition period before the Air Transport Advisory Council is finally replaced by the Air Transport Licensing Board. These details relate primarily to applications for X and Y licences covering operations planned for summer 1961, as non-scheduled operations during the coming winter will continue to be dealt with under the existing procedures.

The ATAC is now engaged in sifting a prolific crop of applications for X and Y licences for summer 1961, and this exercise should be completed by the end of October. The council's recommendations will be passed on to the Minister, who hopes to let his decisions be known to all applicants by the end of November. Within ten days of learning of these decisions, applicants will in turn be required to notify the Minister of their intentions, thus enabling him to publish a single statutory instrument—as envisaged under Section 2(6) of the Licensing Act—authorizing the grant of all the approved transitional X and Y licences. No fees will be charged either for applications or for approvals in the case of these transitional licences, but all licence holders will be liable to an annual fee for 1961. The precise amounts, which will be payable on or before March 31, 1961, have yet to be decided.

As in the past, applicants must receive operational clearance from the Ministry before final approval is given. Additionally, all services to be operated after March 30, 1961, will be conditional upon the possession by the carrier of a valid Air Operators Certificate. Final approval will also depend upon the obtaining of foreign traffic rights. In the case of short series of flights coming under X licences, operators will negotiate directly with the foreign government concerned. In the case of Y licences, operators will probably continue as at present to entrust negotiations to the Ministry. Uncertainty here appears to be due to a division of opinion among the independents as to whether traffic rights for inclusive tours should in future be negotiated by the airline direct or through the Ministry.

A nucleus of the ATLB's secretariat was established at the ATAC's present offices at Dean's Yard, Westminster, last Monday (telephone SULlivan 7166). The board will be formally constituted on October 1, with Mr J. E. Barnes as secretary and Mr D. H. Isaacs as assistant secretary. Later the board is expected to move to permanent premises in the Barbican.

Since March of this year Heron G-AOZN has been operated by its owners, Overseas Air Transport, on charter services and newspaper freighting from Manchester Airport, the company's operations and engineering base. The head office is in St Helier, Jersey. A second Heron Mk 1B, G-ANCI, purchased when the company was formed in 1957, was bare-hull leased to Dan-Air, to Cambrian and subsequently to North-South Airlines, who will continue to operate it until March 1961. OAT—who are not connected with Overseas Aviation—are now negotiating the purchase of a third Heron

AIR COMMERCE . . .

SIR JOHN v. SIR PATRICK

A FORMER member of the Air Transport Advisory Council, Sir John Ure Primrose, says that "BEA's whole set-up in Scotland is ridiculous. They are not operating in the interests of the travelling public—we are only getting what they feel like giving us." Sir John's allegations have been rejected by Sir Patrick Dollan, chairman of the Scottish Advisory Council on Civil Aviation and, until earlier this year, a member of BEA's board.

Sir John Ure Primrose claims that there are "a quarter of a million people in the Dundee-Perth area, yet the nearest airport is at Edinburgh, over 60 miles away. There is an ideal aerodrome at Scone on our doorstep. If you want to fly from Aberdeen to Inverness you must take a plane to Glasgow or Wick before getting on to a direct route. Anyone wanting to fly from the airports of Benbecula and Barra, only a few miles apart, have to fly to Glasgow then back again."

Sir John is sure that his idea of a feeder network could pay "if small planes like the Prestwick Pioneer and helicopters were flown, and airport staffs kept to a minimum. It would mean that businessmen would fly almost direct to their destination instead of being taken round in circles before getting there." BEA's reluctance to operate new routes in Scotland, he says, is not only losing them money but is forcing many people to travel by other means. Sir John remarks that he has been going to London on business every week for the past 14 years, but he has "never once" travelled by air. "I am not prepared to go a train journey to Edinburgh to board a plane at Turnhouse. So I travel by train all the way to London and back again. It is my way of objecting to the idiotic set-up under BEA. Unless they can give me an airport nearer my home then they can jolly well keep their aeroplanes. Air services must take over from the crowded roads if we are to progress."

Rejecting Sir John's remarks, Sir Patrick Dollan points out that BEA still loses heavily on its Scottish routes—to the tune of £300,000 last year. "There has never been any approach by independent operators to fly the coastal services described by Sir John. It would not pay them. It is a mistake to think that every crofter in the Highlands and Islands can afford to rush about in passenger aircraft."

AIR COMPETITION IGNORED

THE latest Select Committee Report,* dealing with British Railways, has surprisingly little to say about the effects of air competition on the railways. The great increases in BEA's domestic trunk route traffic in the last year or two are virtually ignored. The committee has met almost weekly from December 4 last to July 11, and had to complete its inquiries in about half the time that it devoted last year to the affairs of BEA and BOAC, with the result that it has not taken evidence from bodies other than the British Transport Commission, the Ministry of Transport and the Treasury. It seems strange, though, that little more than incidental mention should have been made of air competition by those called before the committee.

Only one paragraph in this 88-page report refers specifically to this competitive threat:—

"In their reappraisal of their modernization plan, the commission expected that on certain stated assumptions they would show a net surplus on revenue account in 1963 (thereafter rising interest charges might force them back into deficit again). Not all their assumptions are being fulfilled. Competition from road and air is increasing, and already in 1960 it is clear that costs and revenue rates are not keeping in step. The Ministry of Transport have now told your committee that they think the Commission's forecast for 1963 is too optimistic."

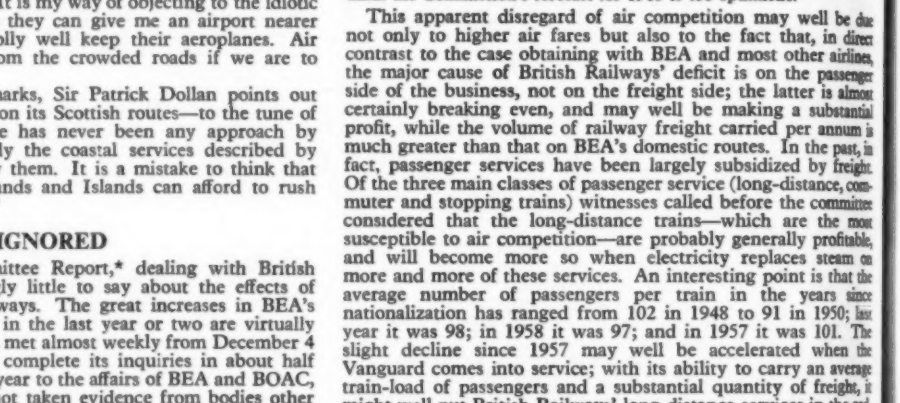
This apparent disregard of air competition may well be due not only to higher air fares but also to the fact that, in direct contrast to the case obtaining with BEA and most other airlines, the major cause of British Railways' deficit is on the passenger side of the business, not on the freight side; the latter is almost certainly breaking even, and may well be making a substantial profit, while the volume of railway freight carried per annum is much greater than that on BEA's domestic routes. In the past, in fact, passenger services have been largely subsidized by freight. Of the three main classes of passenger service (long-distance, commuter and stopping trains) witnesses called before the committee considered that the long-distance trains—which are the most susceptible to air competition—are probably generally profitable, and will become more so when electricity replaces steam on more and more of these services. An interesting point is that the average number of passengers per train in the years since nationalization has ranged from 102 in 1948 to 91 in 1950; last year it was 98; in 1958 it was 97; and in 1957 it was 101. The slight decline since 1957 may well be accelerated when the Vanguard comes into service; with its ability to carry an average train-load of passengers and a substantial quantity of freight, it might well put British Railways' long-distance services in the red.

The committee doubted whether long-distance services did more than cover their costs, and emphasized that the commission could not say with any precision exactly where the 1959 deficit of £42m had been lost. Lack of detailed accounts whereby to gauge the profitability of each region (on which the committee remarked), and lack of statistics, makes it difficult to assess the exact impact of air competition, and the railways might learn much from airline practice in gathering statistics. A greater emphasis on these and on accounts would not only enable forward planning to be based on more conclusive assumptions, but would also induce a greater degree of cost-consciousness, which seems a little lacking at present.

It is known, however, that the Euston - Glasgow route has suffered some loss of day traffic to BEA, although rail traffic to

**Report from the Select Committee on Nationalized Industries: British Railways. HMSO, price 5s 6d.*

TWA's futuristic new terminal at Idlewild is taking shape and should be completed at the end of 1961. This photograph shows the wooden forms into which will be poured the 6,000 tons of concrete required in the arches of the roof



Due for completion in the late autumn of this year is a new engineering base for Aer Lingus at Dublin Airport. To the existing No 2 hangar shown on the left of this model will be added the new Boeing 707 hangar in the right background, while joining the two is a block containing the JT3-7 engine bay offices and workshops. The space between the hangars is large enough to be converted to an additional hangar if this becomes necessary

Newcastle, Edinburgh and Manchester has gained some ground (see page 479 of *Flight's* April 8 issue). The committee does not consider that the railways' deficit arises from the fact that the latter are competing against other, more modern, forms of transport, but feels that a large-scale British railway system can be profitable. But 1960, which it was once hoped would see the railways near to breaking-even on revenue account, now seems likely to show the highest deficit ever achieved. It is not surprising that British Railways' proposed £5m investment in Silver City was not, after all, implemented. Curiously, the report makes no mention either of this or of the Channel tunnel; nor does it refer to the traffic benefits which the railways have gained by rail/air services such as the "Silver Arrow."

OVERSEAS APPOINTMENTS

NEW appointments in Overseas Aviation are announced: Mr L. W. Hopkins becomes general manager; Mr J. C. Chamberlain, sales manager; Mr A. Fleming, sales manager (Manchester) with responsibility for the north of England and Scotland; and Mr J. Hughes, assistant sales manager in London. The reorganization, say Overseas, has been brought about "by the steady expansion of the company's activities," and is intended to cover not only charter and sales, but in due course scheduled services also. Overseas have a number of scheduled-service applications before the Air Transport Advisory Council. So far one scheduled service, Liverpool - Paris, has been approved.

THE COLLEGE OPENS

IN ones and twos, alone or accompanied by parents as far as the comfortable quarters that are to be home for the next two years, the first 21 cadets of the College of Air Training arrived at Hamble on Thursday of last week. With a warm handshake and a friendly hello from the tutorial staff, they were welcomed by AVM E. C. Bates, a quietly humorous Australian who has succeeded Air Marshal Sir Hugh Walmsley following the latter's resignation for personal reasons from the post of principal of the new college.

Six weeks hence, when the first intake have completed the uninterrupted ground school that precedes the start of flying training, a second course of 20 cadets will arrive to swell the numbers to 41 for the first full course. Next year, if a sufficient volume of applicants can be found, the intake may be 100 cadets, and when the big redecoration and refurbishing scheme is complete, in 1962, 220 cadets for BOAC, BEA, Commonwealth operators and the independent airlines could be wearing the college uniform of blazer and flannels at any one time.

The first 41, all destined for BOAC and thus for the corporation's Boeing 707s, were selected for 50 vacancies from about 260 applicants called for interview from BOAC's backlog of 1,500 letters of enquiry. Only those interviewed appeared to have a chance of satisfying the board of governors' standards for health, flying aptitude on the RAF Hornchurch pattern, and educational qualifications—two "A" levels in GCE and five passes in appropriate subjects. The last-named is the most difficult condition, and although the board was persuaded against rigid insistence on "A"s in maths and physics, not every cadet now accepted has achieved the required pass level between the date of his interview and receiving his GCE results.

About half of those entered for the college have flown before, but previous flying experience is no guarantee against rejection at the flying grading test which precedes final acceptance. After about five hours' Chipmunk flying at Hamble there was wastage among the first batch of about 10 per cent, including a number of applicants who were well past first-solo stage. Sqn Ldr Webb, the college's chief flying instructor, comments that previous experience does little except make natural ability more difficult to determine.

The Chipmunks, eight of which were taken over from AST, two of which have come from Airways Aero Associates, are the mainstay of the college fleet. Refinished in smooth silver with black Bristol Plastics nose cowls and red-orange Titanine fluorescent tails, three of them are being decorated with trial cheat lines in the college colours of dark blue (BOAC), light blue (MoA) and red (BEA). Cadets will fly 150hr in Chipmunks before moving on to 75hr in Piper Apache Gs, the latest of the range with the additional cabin window. These will be supplied by the British Piper agents, Vigors Aviation.

The choice of an American twin was practically inevitable, Hamble being too small for all-through jet training to be contemplated. The Student was evaluated and thought "delightful," but the substantial margins required for successful pupil training could not be guaranteed on a grass field of Hamble's size, and the Jet Provost was unsuitable by the same token. The only possible British twin, the Dove, was considered to be too large, and the Aero 145 rather too small. What is really wanted, says the CFI, is a light turboprop on which could be taught both turbine and propeller handling techniques. But the college purse is by no means unlimited and the Apache is the lightest and least expensive of the available US twins. Six should be delivered between June and September next year and by August 1962 the fleet strength will be nine, with 21 Chipmunks.

The Piper Apache G has been chosen as the twin-engined trainer for the College of Air Training. Nine will be on the strength by 1962

Under the CFI seven instructors handle flying training but at full strength the number will increase to about 21, depending upon how much of the five hours' pre-acceptance grading flying is in future to be undertaken at Hamble. The airfield will remain uncomplicated, and open in working hours to visiting traffic. Its only aids are VHF communications and a recently installed Ekco CRDF; instrument flying training is undertaken at Hurn or, on the ground, in five D.4 Links and two 2/4-jet GPS procedures trainers.

A number of ground classrooms are being equipped and there is the nucleus of a comprehensive library. For technical training a range of basic radio and navigation equipment is available and sectioned piston and turbine engines are to be used for teaching operating principles. More modern equipment will doubtless be added as the college expands.

A lot has been heard in the opening days of the college of phrases such as "captains and diplomats," "command material" and so on. Suspicions have been voiced by independent airlines that the emphasis at the college is in the wrong place—on the ground rather than in the air. There is little sign at the moment that the independent airlines, who are represented on the board, yet intend to use the college as a channel for replenishing their supplies of pilots, which are said now to be drying up. But it is to be hoped that they will: the think-for-yourself attitude demanded by the privately-owned airline might be combined usefully with the careful academic tutelage of the college as it is constituted at present. And the abilities imparted by a college training might be a useful attribute to a private airline in that more technical age when the first College of Air Training graduates are becoming airline captains.

AVM E. C. Bates, principal of the College, with (left) Capt T. E. Farnsworth, BOAC chief of flight operations and vice-chairman of the board. Far right, l to r: Mr H. Bromage, bursar; Sqn Ldr G. C. Webb, CFI; AVM Bates; Sqn Ldr C. N. Hoy, CGI; Mr R. E. M. Hughes, director of studies

AIR COMMERCE . . .

A WINNER FROM IRELAND

ANYBODY interested in airline annual reports should make sure of having a close look at the latest from Irish International Airlines. This small company, with modest funds at its disposal, is capable of producing a review of its activities such as is seldom excelled by the glossier publications of some of its well-heeled big brothers.

But more important than mere appearance is the quality of the report itself. With admirable economy of words, the authors have provided an exceptionally penetrating description of a year in the life of Irish aviation.

Although both Aer Lingus and Aerlinte Eireann lost money in the financial year 1959-60, the general tone of the report is one of quiet optimism. In the case of Aer Lingus, an insignificant loss was shown after payment of interest; this deterioration (1958-59 showed a slight profit) was entirely due to reduced load factors—down from 65 to 62 per cent—which in turn was because capacity went ahead of traffic, 1958-59 traffic having been artificially inflated by the Lourdes Centenary.

The report points out frankly that the airline is not yet taking full advantage of its recent transition to larger aircraft—Viscount 800s instead of 700s, F-27s instead of DC-3s. But it avers that traffic growth in the years immediately ahead can be largely accommodated by the existing fleet of seven V.800s, seven F-27s and five DC-3s, plus use of Aerlinte's three Boeing 720s as from next spring. In 1959-60 the aircraft in this fleet averaged 1,454hr annually on an ultra-short-haul network (average stage distance 225 miles) to produce a total output of 24.7 million c.t.m. at an average cost of 37.7 pence per c.t.m.

At just under £4 million, total revenue on Aer Lingus services was slightly ahead of operating expenditure. A sharp rise in interest on capital, however, had the effect of putting the year's activities into the red. Although the Aer Lingus share of air traffic between UK and Ireland has been falling steadily as UK operators invade the Irish market, this share still provides Aer Lingus with over three-quarters of its total traffic. And the fact that travellers across the Irish Channel are tending to abandon the shipping services in favour of air travel (the airlines' share of the total has expanded steadily from 20 per cent in 1953-54 to 25 per cent in 1956-57 and further to 32 per cent in 1959-60) means that the size of the cake is growing comfortably fast.

Both Aerlinte and Aer Lingus are controlled by Aer Rianta, which also manages Dublin Airport. Revenues from this latter activity are well ahead of expenditure (£228,000 as against £168,000), although no allowance is made in these figures for interest on capital or depreciation. About half of the profit arising from Dublin Airport is used to cover the interest payments on £656,000 owed to BEA. In order to finance the future expansion of Aer Lingus and Aerlinte, and to allow greater activity in such fields as hotel construction, the authorized capital of Aer Rianta was increased during the year from £2m to £10m. Although this might seem a large amount to be put into aviation by a government of a country the size of Ireland, it could be money well spent, by an evidently well-managed airline.

ELECTRA ACCIDENT AT LA GUARDIA

AN American Airlines Electra which hit an 8ft-high dyke while aproaching to land at La Guardia Airport on September 14 turned over and caught fire. The aircraft was virtually burnt out, but all 70 passengers and six crew escaped to safety, although six were subsequently treated for burns and others had minor injuries. The Electra was on a flight from Boston, Mass, and made its approach in sunny weather with a slight haze. The dyke it struck keeps water from Flushing Bay from flooding the airport.

It is reported that, at the time of the accident, the Electra was being flown by a supervisory pilot, Mr Sheldon Pangbourn, and that the dyke was struck as the result of a downdraught.

BREVITIES

In the first month of test flying the Max Holste Super Broussard logged 50hr.

The first tender has been received for a new airport to be built about 32 miles west of Baghdad at a cost of about £11.5 million.

An air services agreement has been signed between India and Iran which gives "beyond" rights to India from Teheran and Abadan and to Iran in Delhi or Bombay.

Silver City have applied for a UK internal service between Leeds/Bradford and Newcastle to be operated with DC-3s, and Orion Airways have applied to operate a scheduled service between Gatwick and Le Touquet.

Calvert-type visual glide-path indicators are to be demonstrated to general-aviation pilots attending the FAA's fly-in at the National Aviation Facilities Experimental Centre, Atlantic City, New Jersey, on October 1. Five systems were evaluated before the FAA Bureau of Research and Development selected the RAE-developed red-white system.

The pool agreement between SAS and BEA has been revised and will come into effect for a period of five years on November 1. It is aimed primarily, say SAS, "at expanding jet routes between four capitals, London, Stockholm, Oslo and Copenhagen, on an economical basis."

Los Angeles Airways took delivery of the first turbine-powered helicopter for commercial operation from the Sikorsky factory at Stratford, Connecticut, on September 8. A T-58 powered S-61, it will enter service next month as forerunner to the airline's fleet of five twin-turbine S-62s, three of which will be delivered in 1961 and a further two in the following year. This fleet will replace the S-55s operated at present.

An "unconfirmed rumour" reported in *Aviation Daily* is that Howard Hughes would like Mr Eisenhower to join the TWA board on completion of his term as President.

More than half-a-million passengers were carried by BEA for the first time in July and revenue exceeded £5 million in a single month for the first time.

Capt T. H. Farnsworth, BOAC's chief of flight operations, is resigning from the corporation. The resignation is to take effect when a successor is appointed.

The US team touring Russian airfields and air transport facilities at Moscow, Kiev, Minsk and Tashkent, led by Mr E. R. Quesada, FAA administrator, includes Stuart Tipton, president of the ATA; W. Wallace Lynch, PanAm assistant v.p. communications; Ray M. Dunn, TWA v.p. technical services; Hans Heymann Jnr, Rand Corp economist; and FAA air traffic management and facilities and materials technicians.

Relaxation is likely in the FAA's unpopular rule about one air transport pilot always wearing an oxygen mask. A new requirement might be that (1) neither pilot need wear a mask below 35,000ft provided a quick-donning mask is at the ready; (2) if a mask of this type is not available one pilot would have always to be on oxygen above 25,000ft; (3) if one pilot left his seat the other would have to wear a mask at any height above 25,000ft.

The first Government trooping contract for British Army and RAF personnel and their families in West Germany has been awarded to Silver City. Manston Airport will be used and the airline expects to operate about 50 flights a month in each direction starting on October 1. The Silver Arrow London - Paris service operated through Manston and in conjunction with British and French Railways, is to be suspended for the winter from October 1.

Held at the RAeC earlier this month was the thirteenth Imperial Airways Trainees' reunion dinner From right to left on the far side of the table are: M. D. Morrissey, BOAC; E. P. Whitfield, BEA; D. J. Platt, Falcon Airways; P. Shillitoe, BEA; G. S. Parker, B.P.; W. I. Scott-Hill, BEA; M. A. Smith, *Flight* (guest); J. W. S. Brancker (chairman); Basil Smallpeice, BOAC (guest); D. Grey, BEA; W. Quekett, Trans-Mediterranean Airways; S. Broad, BOAC; P. C. Armour, ICAO; and J. R. Stainton, BOAC. Facing them are: D. O. Bustard, BOAC (nearest camera); M. Stuart-Shaw, CAA; A. Thomson, Seaboard and Western; G. Pett, BEA; D. H. Handover, Hon trainee No 2; G. W. Woods-Humphrey, Hon trainee No 1; P. G. Tweedie, MoA (guest); K. G. Granville, BOAC; Paul Bewshea, BOAC (guest); M. H. Curtis, Curtis and Greenstead; R. G. Gibbons, BEA; O. Hone, Aer Lingus; R. H. Trench-Thompson, BOAC; Sir Edward Moore, BEA

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